

The Refrigeration Service Engineer

TECHNOLOGY DEPT.

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VOL. 11 NO. 6

JUNE 1943

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June, 1943

4

THE REFRIGERATION

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the most vital parts in our civilian life, assuring everyone a supply of fresh, wholesome food, in or out of season.

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The valuable data gained by the industry in production for war, will be used to make better products for peace. "Detroit" products then, as now, and as in the past, will continue to be the best that it is possible to produce for the refrigeration industry.

THESE PRODUCTS HAVE BEEN ESPECIALLY DESIGNED FOR WAR-TIME SERVICE

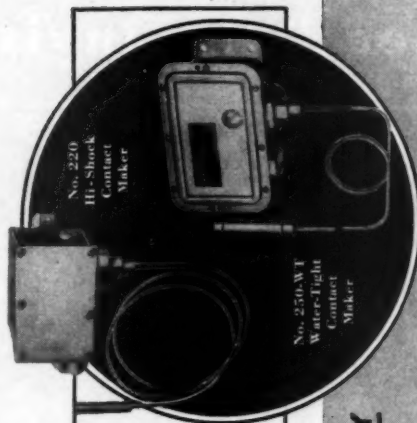
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One method used by Alco, and illustrated above is magnetic inspection of iron and steel parts. The part to be tested is placed within a magnetic field, then sprayed with ferrous oxide particles suspended in oil. The formation of these iron filings on the surface of the part indicates the molecular structure of the metal, from which hidden flaws can be detected.

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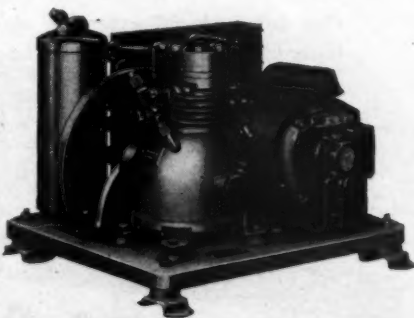
YOU refrigeration service engineers have a real job on your hands. But you've proved you have the skill and resourcefulness to keep old equipment running when new equipment can't be had—when parts may be hard to get—when you're restricted in many ways!

But there's a brighter side to this picture too. The contacts you are making today should help you broaden your field after the war. For example: you may find new servicing opportunities in nearby plants now doing war work. Keep your eyes open there for chances to suggest new installations of G-E refrigeration.

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The Refrigeration Service Engineer

Vol. II

No. 6

June, 1943

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The Refrigeration Service Engineer

Vol. 11, No. 6

CHICAGO, JUNE, 1943

\$2.00 Per Annum

Delco Relay on Household Refrigerator

Single-phase Motor Control and Protective Device—Hot Wire Start and Overload Relay

NOTE: For those who are seeking information on Delco relays as used on various household refrigerators, the following article will be of interest. The information is compiled from a service instruction pamphlet issued by the makers of these relays, the Delco Products Division of General Motors. It should be understood that they are not available in standard ratings, each being designed and calibrated for use on a certain model refrigerator.

THE Delco hot wire start and overload relay is a switching device designed to provide starting control and overload protection on small single phase motors. It is applicable to split phase, condenser start and permanent condenser type motors. It is used, at the present time, principally as a control device in connection with hermetically sealed refrigerator units.

Construction

The relay consists of a thermal responsive wire element "A" (Fig. 1) which controls the operation of two single pole single throw

switches "B" and "C." The thermal element is connected in series with both motor circuits. One pair of contacts "S" and "C" are connected in series with the starting winding of the motor. The other pair of contacts "B" and "M" are in series with the main or running winding. It is impossible for contact "M" to close without contact "S" having been first operated. This is controlled by the spacer link construction "R."

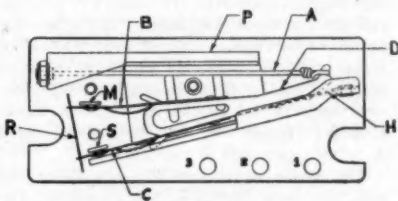


FIG. 1

The switch has been designed with a minimum of parts and is not complicated in construction or operation. The essential parts consist of a thermal responsive wire element "A"; a moveable contact arm "D" hinged with a flat steel strip spring "H" carrying the moveable contact structures "B" and "C"; two stationary contacts "M"

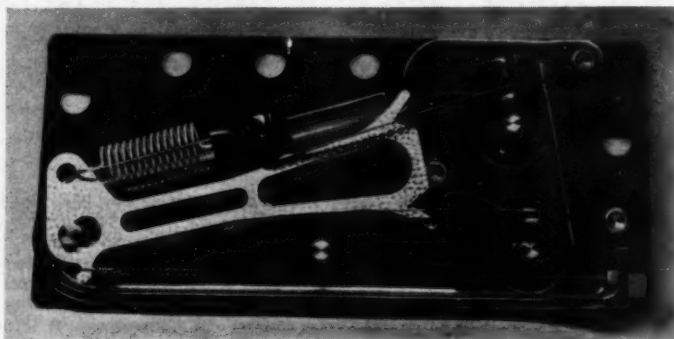
and "S"; a dual-constructed frame "P," and a spacer link "R."

The thermal responsive wire element "A" is made of a nickel chromium alloy which has a high coefficient of linear expansion and good mechanical strength at elevated temperatures. It has relatively high specific resistance and the wire temperature responds rapidly to the changes in current which it carries. Over the range of operating temperatures at which the wire is worked, a change in wire length is obtained. This movement is multiplied by the hinged arm "D" to obtain still greater movement at the contact structure. In order to insure accurate and permanent wire calibration, its maximum working stress is held to within one third the elastic limit of the wire.

cause of this, "dressing" or "filing" of contacts is unnecessary.

How It Operates

The operation of the relay can best be explained by reference to Fig. 2, and a description of its application and performance on a split-phase type motor. The common motor lead between the main and phase windings is connected to the line. The main winding lead of the motor is connected to one stationary contact and the starting winding is connected to the other stationary contact. The other side of the line is connected to the relay frame and thus there is a circuit through the thermal element through the moveable contacts to the stationary contacts.



The hinged arm "D" is a skeleton type steel frame which carries two moveable contact toggle structures "B" and "C." A special steel strip spring hinge "H" is used to fasten the moveable contact arm "D" to the frame "P." This spring hinge is made of the finest steel obtainable and has the highest resistance to fatigue of any known metal. Extensive laboratory tests have proven that it retains permanent calibration.

The single break contacts are silver and will not form non-conducting oxides. Be-

When the motor is not energized, both sets of contacts are closed.



FIG. 3

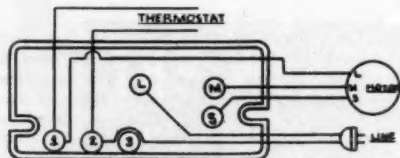


FIG. 2

When the motor is energized, the line current is carried through the thermal element which expands and moves hinged arm "D" (Fig. 3) to a position at which the starting contacts "C" and "S" open, cutting the starting winding out of the circuit. This

(Continued on page 44)

The Construction of Compressor Bodies

(CONTINUED FROM MAY ISSUE)

NOTE: This is the fourth of a series of articles on the Construction of Compressor Bodies designed to give service men a more complete understanding of compressor construction and how to dismantle and assemble them for repairs and adjustments. The compressors described in these articles are made by the Williams Oil-O-Matic Heating Corp., Bloomington, Ill. The construction details and principles, however, apply to other makes.—Editor.

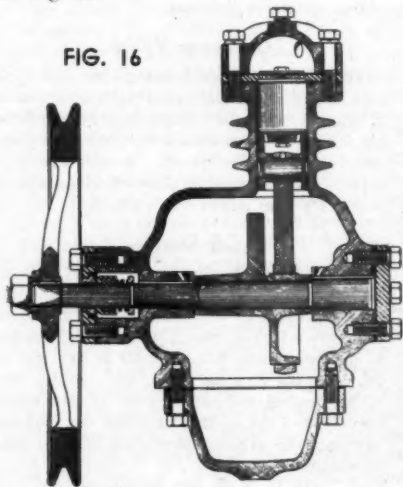
Compressor Body No. Y-405

Compressor body No. Y-405 (Fig. 16) has a bore of 1-5/16-inch, stroke of 1-5/16-inch, single cylinder, and is used on Model TS compressor units from beginning.

Piston Assembly

A cast iron piston with suction valve in the head is used in this compressor body. This piston and valve assembly is illustrated in Fig. 17.

FIG. 16



SERVICE ENGINEER

A series of holes in the piston head permit free passage of vapor into the compression chamber during the downward stroke. On the upward stroke, return of this vapor to the crankcase is prevented by a disc valve (4, Fig. 17) which closes over these openings. This valve is held against the seat by the spring (5, Fig. 16). This spring is located between the retainer (6, Fig. 17) and the valve.

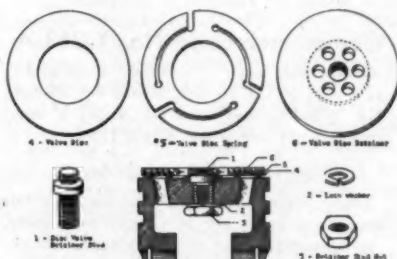


FIG. 17

The piston valve assembly would function without the spring (5, Fig. 17) but where noise is a serious consideration as is the case in domestic models, quieter operation can be obtained by spring-loading this valve.

The wrist pin is pressed into the piston and remains stationary, all movement being in the eccentric strap bearing which has a bronze bushing.

Eccentric and Shaft

The eccentric is made of cast iron and is so counter-balanced that very smooth single-cylinder operation is obtained providing that the compressor is properly mounted. The rubber mounting must be used for this unit. Spring mounting, such as furnished for the twin-cylinder unit, cannot be used for this single-cylinder unit.

In assembling, the piston assembly, eccentric strap, and eccentric must be slipped into

the crankcase as a unit, the lower end of the cylinder being chamfered to receive the piston rings. When the eccentric is pushed in place, the eccentric shaft may be started into the eccentric. A press will then be required to force the shaft into the eccentric. No keyway alignment is necessary, this being entirely a press fit.

Lubrication

Lubrication of all working parts is taken care of by splash and dip. The oil supply is carried in the crankcase.

One and one-half pints of oil is required for this body providing that there is no oil in the cooling coil. If the cooling coil has previously been in operation and the methyl chloride has had an opportunity to absorb lubricating oil, one pint is adequate.

Compressor Body No. Y-263-A

Compressor body No. Y-263-A (Fig. 18) has a bore of 1-5/16-inch, stroke 1-5/16-inch, twin cylinder, and used on Model T compressor units beginning April, 1934.

Eccentrics, Shaft, and Straps

The eccentric and eccentric shaft in this compressor body are two individual parts.

In assembling, the pistons, straps, and eccentric must be slipped in through the bottom of the crankcase together. When the hole in the eccentric lines up with the main

bearings, the shaft may be started in place. A press is required to force the shaft into the eccentric. The shaft should be pressed until the shoulder on the shaft strikes the eccentric. There are no keyways to line up in this procedure, this being entirely a press fit.

Obviously, if the compressor must be taken apart, the shaft must be pressed out from the pulley side.

Some of the earlier Model T compressors are constructed the same as illustrated in Fig. 18 except that the bottom of the crankcase is a flat plate and the eccentric straps do not have the dips. In that type of body the oil level is carried up to the center of the eccentric shaft.

On the later bodies such as illustrated with the lowered crankcase plate, a lower oil level is maintained and the eccentric straps are provided with dips which pass through the oil supply and bring the oil up to the bearings. With this construction, there is less agitation of the oil and consequently less chance for oil pumping.

With either arrangement the main bearings, wrist pins, and cylinder walls are lubricated by splash.

The majority of the Model T units in the field have a valve arrangement such as illustrated in Fig. 10 except with only one valve disc instead of two. The later units, however, have exactly the same valve arrangement as shown in Fig. 17. The only purpose of spring-loading this valve is to obtain quieter operation.

Discharge Valves

The discharge valves are of the disc type and are of the same construction as shown in Fig. 11, with the exception of some of the earlier Model T bodies which have the flap-per valves on the cylinder head. The disc type of valves have the distinct advantage of requiring less power for opening.

Oil Supply

On all Model T compressor bodies without the oil pump, regardless of whether the plate on the bottom of the crankcase is flat or of the lowered type, the lubricating oil supply is the same—one and one-half pints, providing that there is no oil in the cooling coil. If the cooling coil has been in operation previously and the methyl chloride has had opportunity to absorb lubricating oil, one pint is adequate.

(To be continued in July issue)

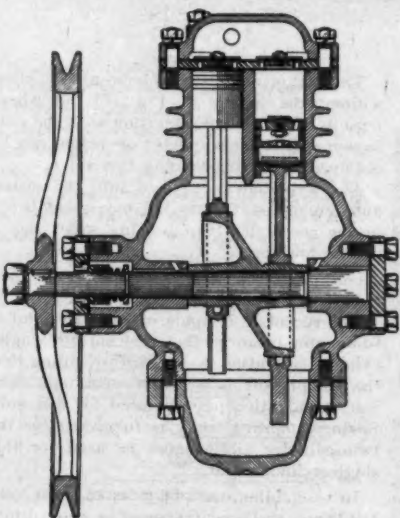


FIG. 18

Service Pointers

Practical Service Men Tell How They Meet New Repair and Service Problems

UNDER this department a number of practical service men show a commendable cooperative spirit in passing on to others information on special repair and service problems that may be of much value in these trying times of material scarcity and shortage of competent help. We believe if more readers would send similar contributions, making THE REFRIGERATION SERVICE ENGINEER a medium for the exchange of information on service, much benefit would accrue to all. Similar contributions are solicited from all readers.

AWAKENING OLD CUSTOMERS

OLD customers sometimes need awakening. The small service concern, and I refer to the one man concern, usually cannot afford expensive methods for advertising nor does he wish to write long letters explaining that the customer hasn't called for a long time.

Strangely, a small firm does not like to advertise, depending entirely on satisfactory work for recommendation and new customers. This establishes the serviceman a steady, reliable business but old customers need to be reminded of the fact that he is still considering them as good customers.

Too, it is not good policy to send them high pressure letters, expensive throwaways, telephone calls or offer special service rates. They just need a gentle reminder.

The simplest method is mailing Christmas greeting cards to all customers with the firm's name printed on. There is usually no extra charge for this printing service. If the cards are secured early enough in the season, just a few envelopes a night will have them ready in plenty of time for mailing. This is not an expensive system to follow and it gently brings about the results you wish obtained, besides helping to bring in a little extra Winter business.

Before the war large manufacturing concerns had, at times, given away throwaways explaining their products. The serviceman could forward these on to his old customers, first making sure he had prominently displayed his name and telephone number somewhere on the leaflet. The only time taken for this is the envelopes and stamping the name on the leaflet. As this is nothing which

requires immediate attention, the serviceman can take his time, doing some only when he pleases, thereby spreading the reminders over a period of weeks.

As this second method is out for the duration, the war has brought on another solution for him. This new second method is longer, requiring more time and more writing but is exceptionally good for the Eastern Seaboard where the gasoline shortage is critical. Other parts of the country could use the rubber shortage as a means of contacting their customers.

One man concerns have a custom of working late evenings or Sunday. This second solution is to aid him in shortening his working day and also to help conserve gasoline. In order to do this he must write personally each and every customer explaining the situation. I say personally, as it helps keep that friendly personal touch which has so aided in the establishing of the business. Perhaps, the sample letter below can better explain just what I have in mind.

Mr. J. Doe,
111-11 11 Street,
City.

Dear Mr. Doe:

In order to cooperate with the program for conservation of gasoline, we have decided to limit our service calls to six days a week.

As most of our customers already observe the shorter week by closing completely or partly on Sunday, we decided to eliminate all Sunday calls.

May we, also, take this opportunity to thank you most heartily for your patronage,

your friendship and your cooperation which have aided us in our growth.

Sincerely yours,

The only way time can be saved on this is by typing duplicate copies and printing the name and address later. These letters must be mailed at one time, therefore they must be predated several weeks in order to complete the list of customers.

These two methods are inexpensive, take a little time and bring back the old customers to the fold, besides establishing a firmer contact with the others.

§ § §

FREEING A STUCK COMPRESSOR

By U. J. Grant

RECENTLY I had an SO₂ compressor stuck up which resisted most of my efforts to free. I finally got it free without damaging it by heating with a blow torch. First I bolted it down on a work bench with belt wheel off the edge of bench which allowed me to exert torque on crank at the same time the heat was applied. In about one minute's time of applying heat the machine showed signs of turning but as soon as the heat was removed the piston would stick again. After three or four trials the piston was free, especially at the lower end of stroke. After rocking it back and forth for several minutes and applying light oil at the same time, the piston could be turned through a complete revolution.

§ § §

COMMENTS ON PAST ITEMS

By Wm. R. Pawley

I HAVE always received worth while help when I have asked for it from your publication. Now, I hope to reciprocate by offering the following:

Mr. C. B. and his sticky door gaskets:

First of all, it is necessary to instruct your customer in the proper washing methods to be used on these gaskets. The refrigerator should never be washed with a dish cloth which may contain salt, grease or soap. All these tend to deteriorate the rubber, making it become sticky and soggy. Next, it is a good plan to coat this gasket occasionally with powdered soapstone, tire-talc, or common talcum powder. An old powder puff makes a good applicator for these materials.

Mr. Frank R. Bader and his thermostatic expansion valves:

I would like to add another thought to Mr. Bader's troubles with expansion valves. In my experience, I found that in order to clean out valves containing moisture around the bellows, it is a good plan to fill the space to about two-thirds of its capacity with Prestone or Glycerine. Then wash them in Carrene. Carrene seems to be a better cleaner than many of the solvents found on the market. We keep a jar of Carrene handy at all times in which to soak dirty screens, fittings and parts which we are re-operating. Blowing them off with air after soaking in the Carrene, does a very nice job of cleaning. Alcohol is never used in valves, because all steel and iron parts will rust and deteriorate very quickly.

§ § §

SUBSTITUTE FOR PENETRATING OIL

By Kenneth Shea

PENETRATING oil, of course, is not on the critical list of materials which are hard to get, except when you find yourself out on a job and have forgotten to bring it along. Then when you run into one of those stubborn screws you have the choice of wasting a lot of time and miles in getting penetrating oil or of taking the chance of breaking the screw when more pressure is applied in order to remove it.

When you are confronted with this problem, ask the housewife for some iodine, apply a little to the screw and let it set for a time. If you are lucky the screw will loosen up and come out. The iodine will often work better than some penetrating oils.

§ § §

TESTING THERMOMETERS

NO doubt you are occasionally bothered with the idea that your pocket service thermometer is not accurate and then you begin wondering how to test it. To test alongside another thermometer is not satisfactory, because you have no assurance that it is correct.

The simplest manner of testing is to place it under your tongue and hold it there about five minutes. If the temperature reads 98.6° F., which is the normal temperature of the body, you can be sure your thermometer is accurate.

A second method is to insert the thermometer in a container filled with cracked ice and sufficient water to cover the ice. If the temperature reading is 32° F., your thermometer is accurate.

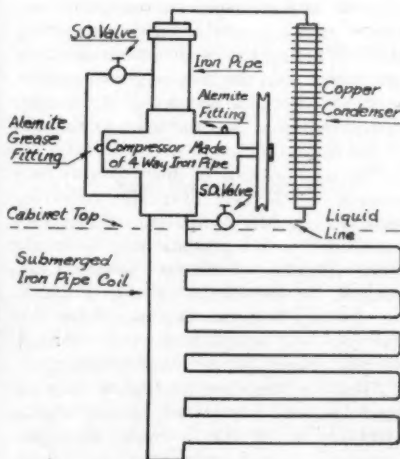
HELPI HELPI

SHORTAGES of materials have created many new problems for the service engineer which in turn create many new questions, answerable only from practical experience in the field. Readers of this journal have submitted the following questions on which they would like to have information as to what others are doing. Answers to these questions are solicited from readers and will be published. Those who have questions are invited to send them in. Both questions and answers in regard to such problems will be published as received.

THE KARGE REFRIGERATING MACHINE

I wonder if you could give me any information regarding a Karge Refrigerating machine manufactured by Karge Refrigeration Co. of Brockport, N. Y. I recently came across one of these units being used as a milk cooler on a farm in Somerset County, New Jersey, and same has not been operating for over a year. Due to the shortage of metal, I should like to put this unit back in service.

This is the most peculiar looking contraption I've seen in twelve years of refrig-



eration work. There is nothing on the name plate or anywhere else to indicate what kind of refrigerant it uses and it is built like nothing in this world. The compressor is built mostly of large size iron pipe; the crankcase is merely a 3 in. to 4 in. iron pipe four-way tees; another short length of slightly smaller pipe constitutes the cylinder block; and the bottom of the four-way extends directly down to form what is supposedly an evaporator submerged in a water bath with no sign of an expansion valve or anything else which might serve the same purpose.

The liquid line proceeds from the bottom of a copper pipe and finned condenser directly into the iron pipe below compressor crankcase and disappears forever. The unit is propelled by a 1/4 hp. capacitor motor, belt drive. Above is a rough diagram of this unit, including evaporator, which I hope may be of some help in solving the mystery.—L. E. B.

RENEWING OIL SOAKED RUBBER

What can be done to prolong the life of rubber used for motor and frame mounting after it has become swollen due to oil penetration?—C. A.

REBUILDING BRONZE BEARINGS

How can bronze bearings be rebuilt?—D. F.

STUDENTS GRADUATE FROM REFRIGERATION COURSE

THE first class of students completing the refrigeration course sponsored by the Electrical Association of Philadelphia and the Board of Education of Philadelphia, was graduated May 18. This school, which is being conducted at the Dobbins Vocational School in Philadelphia offers practical training in refrigeration theory and service. It has started on a very successful basis.

Graduation of the first class was celebrated with a dinner given by the class in honor of the instructors, Mr. Cory, Mr. Kauffman and Mr. Lewandanski. John A. Locilento served as toastmaster and Andrew Branuy was chairman of the Dinner Committee. Principal speakers were Sheridan Taylor and A. F. Muncy, representing the Electrical Association of Philadelphia, and Instructors Cory, Kauffman and Lewandanski.

COMMERCIAL

INCREASE BUSINESS BY
DOING A MORE EFFEC-
TIVE JOB OF SELLING

Selling

Complete Service Call Record Sent to Customer Helps Build Refrigeration Service Volume

By Robert Latimer

ALTHOUGH there are plenty of customers for almost any type of home appliance repair service nowadays, it will not pay the dealer now in the service field to become apathetic about them, according to Frank Monzingo, head of Alabama Appliance Service Company, Montgomery, Alabama.

"We are constantly campaigning for additional customers just as we did in the days before the war," Monzingo said. "On the basis that we are usually able to sell the refrigerator owner a complete tuneup and adjustment job on his refrigerator over and above whatever the original trouble was. The easiest way to build up a volume of this kind, we have found, is through sending customers an accurate record of the whole job which impresses them enough to suggest us to friends."

Service Call Record

Eight refrigeration service men working on domestic and commercial refrigeration in Montgomery and suburbs thus have the responsibility of filling out a special form as they do their work step by step. The

form is titled "service call record" and has a space for the name and address of the customer and the time her telephone call was received. Beneath in listed order are points important in repair or checking the box, such as door gaskets, fluid pressure, condenser condition, electrical parts condition, expansion valve, etc.—all written more to be easily understood by the customer reading over the list than anything else. Whether the repairman makes one single repair on the box, or gives it a complete \$10 checkup, he lists all steps, signs it, and brings it into the office at the end of the day.

The accumulation of thirty to forty such records is checked over the following morning by Mr. Monzingo. Then they are mailed with a personal note of thanks from Alabama Appliance Service Company to the housewife. The note thanks her for her business, expresses hope that the job was satisfactory, and promises equally efficient service in the future.

"Because there are no highly technical terms on the job record, or any mystic symbols which the average intelligent housewife cannot understand, this creates

an excellent impression," Monzingo said, "and we have had dozens of new customers calling in tell us that Mrs. so and so down the street had recommended us. The usual housewife appreciates good work, and having once read over our record of her own job, will memorize our name and telephone number."

Of course Alabama Appliance Service company men also leave an identifying card with the name and address which is hung up near the refrigerator or whatever appliance is serviced, with a prominent telephone number. However, such cards become misplaced or lost completely, it has been Monzingo's experience. The rec-

ord slip, on the other hand, is usually placed away carefully and thus helps to bring in the business on the next call.

"It is unfortunate that many appliance service firms who were formerly dealers are overlooking the fact that their customers must be treated with just as much respect as if they were buying a new \$200 refrigerator," Monzingo added. "It is easy to injure a customer's feelings when there are too many crowded into the day's work—but these people are the prospects for new merchandise after the war is won, and if they have not been properly treated, the dealer going back into sales will find that he has harmed his chances immeasurably."

"How to Lose the War" Sign Gets Better Production

By Donald Delaney

DISCOVERING that there were occasional letdowns and breaks in the production of vitally-needed refrigeration equipment for the Army and Navy, a St. Louis refrigeration manufacturing plant has made a complete study of their causes. Interviewing 60 of some 600 employees about the problem, the management asked informally for the employees' own ideas for overcoming them. Major causes, it was found, consist of work fatigue through monotonous jobs, friction between employees, and frequently of laziness or wasted time on the part of one link in the chain of manufacturing operations.

Rest Periods Started

To overcome these "slumps" the management first inaugurated a ten-minute rest period three times a day to combat fatigue. The more difficult job of overcoming employee irritation and "goldbricking" was met by a humorous method—a huge "How to Lose the War" sign suspended in the center of the plant where every employee could see it several times a day. Painted in red letters on a white background, the sign read:

"How to Lose the War

1. Report to work late, stall around, and spend at least one hour of each day in the rest room or gabbing with another employe at the latter's bench.
2. Keep continuously finding fault with those who pass work to you; run down everybody and everything connected with your own lack of production.
3. Ask stupid questions; ignore your superiors, and be sure to go over their heads. You know much more than they do.
4. Knock off for lunch at least ten minutes before the designated time. Practice being extremely busy and interested in your work one half hour before quitting time only.
5. Be a social planner. Make your dates and arrangements on the factory time. If the job's behind schedule—the heck with it. Don't let the boys on our battlefronts interfere with your good time.
6. Keep the telephone busy with your personal calls. This can be counted on to prevent urgent business from being executed.

(Continued on page 44)

Important Amendments to L-38

NUMEROUS changes of considerable significance to all segments of the refrigeration industry are embodied in the amended order L-38 issued on May 20 and 28 by the War Production Board. Excluded from the provisions of this order are such "parts" as belts, packing, refrigerants and lubricants. The amended order also permits the producer or dealer to deliver maintenance and repair parts to industrial and commercial establishments in accordance with the Controlled Materials Plan (CMP Reg. 5 and others).

Items Restricted

The present amendment of order L-38 excludes the following items from its restrictions: Liquid or gaseous refrigerants; oil or other lubricants; cleaning fluids or other solvents; anti-freeze fluids; belts and belting; gaskets; packing; soldering and brazing fluxes and welding rods; nonmechanical filters; paints, enamels, varnishes, thinners and seam fillers; wax polishes and rust preventatives; insulating materials necessary for maintenance and repair service or to partition an existing enclosure; small hardware such as nuts, bolts, screws and cotter pins. Although these materials are excluded from the provisions of order L-38, certain of them remain under other restrictions of WPB which, of course, must be complied with.

Those exclusions in the amended order answer many of the questions brought up at the recent war conference in Chicago. At that time the materials listed were without specific restriction if used in domestic repair work but carried a high rating if used in commercial work.

The application of the order has been clarified in the amendment to exclude dealer's resale activities. The restrictions on maintenance and repair parts apply to "any person acquiring same for use" which includes "the owner lessee, or other person who purchases or otherwise secures delivery of any systems, parts, or other equipment covered by this order, for use; but does not include a dealer or producer acquiring systems, parts or equipment for resale, and reselling the same."

The amendment continues the previous exclusion of domestic mechanical refrigerators and domestic ice refrigerators. Restrictions on farm milk coolers are changed to include only evaporator coils and condensing units.

Maintenance and Repair

The amended order contains the following restrictions on deliveries of parts for maintenance and repair service:

"(i) No dealer or producer shall deliver any new or reconditioned parts to any person acquiring same for use, and no such person shall accept delivery of any such parts, unless the parts are delivered

"(a) For use in maintenance and repair service and to fill a purchase order bearing a preference rating of AA-5 or higher, or

"(b) By an agency authorized to apply ratings under Preference Rating Order P-126, in performing the service provided for by said order, or

"(c) To fill an authorized order, or

"(d) For direct use by the Army, Navy, Maritime Commission, or War Shipping Administration, including orders for any Army or Marine Corps post exchange or any U.S. Navy ships service department; and the parts replaced shall be disposed of in accordance with paragraph (e) of this order, if made of metal.

"(ii) Any producer or dealer receiving an order, bearing a preference rating of AA-5 or higher, for parts which are permitted to be delivered only for use in maintenance and repair service, may deliver such parts to a person acquiring the same for use, unless the producer or dealer knows, or has reason to believe that such parts will not be used for maintenance and repair service."

It should be noted under paragraph (a) that sales are permitted where they are for maintenance and repair service and the purchase order bears a preference rating of AA-5 or higher. This amendment brings L-38 in line with the minimum preference ratings for repair and maintenance parts established by CMP Regulation No. 5 as amended May 14, 1943. This regulation extends a preference rating of AA-5 or higher for necessary maintenance and repair of facilities required for producing any product or conducting any business.

8

Ratings considerably higher than AA-5 are given to certain activities listed in the regulation. Refrigeration service engineers who engage in commercial service will find it wise to become familiar with the various special ratings extended for maintenance and repair materials under CMP Reg. 5.

Further Restrictions

A new restriction prohibits the sale of used air conditioning and refrigerating equipment of 3 h.p. or larger by any person, except on an authorized order.

The required utilization of replaced parts has been further extended. The user is required either to dispose of replaced metal parts through regular scrap channels within 30 days or return them to his supplier. All such replaced parts thus obtained by a dealer or producer during any calendar quarter shall either be repaired and replaced in his inventory, or returned to his supplier of new parts, or disposed of through regular scrap channels during or within thirty (30) days after the end of such quarter: Provided, however, That no block tin pipe shall be replaced unless an equal quantity thereof is returned to the fabricator. Parts supplied to the army, navy and other government agencies are exempted from this provision.

Exempted Transactions

Among the exemptions are the temporary delivery provisions detailed in Section (g)

(1) (a) of the order which permits "the temporary delivery of a used system or parts to a dealer or producer for repair and redelivery to the same owner; the redelivery of a repaired system or parts to the same owner, the loan of a new or used system or parts for a period not to exceed 30 days pending the performance of maintenance and repair service to a used system or parts; the exchange of a used sub-assembly of a type which is normally exchanged in assembled form in order to permit immediate restoration of an installed system to service and subsequent shop reconditioning of such sub-assembly, in the performance of maintenance and repair service; and the redelivery to the lessor or lender, of a leased or loaned system, upon the expiration of such lease or loan; or

(b) The delivery of a used system or parts for junking or scrapping."

Effect on P-126

Since the amendments to CMP Regulation 5 and Order L-38 there has been some question of the continued value of Order P-126. Analysis of these three together indicates continued value of the latter order in several specific situations. P-126 gives priority assistance for emergency repairs without regard to quantities previously purchased. In other words, preference ratings under P-126 can be used to secure emergency repair parts considerably in excess of quantities purchased last year. This is not true of maintenance and repair parts purchased under CMP Regulation No. 5, except in cases where annual requirements of maintenance repair and operating supplies do not exceed \$5,000 per year. The size of this exemption would take in the bulk of commercial refrigeration service work, but not all of it.

The inventory replacement provisions of the P-126 order also continue to be valuable. It provides the assistance of preference ratings up to AA-4 for use by emergency service agencies in maintaining their inventories.

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ICE CREAM CABINETS ARE NOT HOUSEHOLD REFRIGERATORS

A RECENT interpretation issued by OPA states that ice cream cabinets are not "household mechanical refrigerators" and therefore the following regulations and schedules are not applicable to such units:

Schedule No. 102. Regulation No. 110, covering resale of new household mechanical refrigerators.

Regulation No. 189 covering used household mechanical refrigerators.

The General Maximum Price Regulation still applies.

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DIRECTORY OF WAR AGENCIES

A HANDBOOK of emergency war agencies has been prepared by the Office of War Information as a guide to Federal agencies all of whose present functions are devoted to the war activities. It does not include the activities of the agencies established for other purposes, even though much of their work today has been integrated with war program. The handbook is designed to help the public reach the services it needs within the emergency war agencies.

Temporary Restrictions Established on Freon for Comfort Cooling

EFFECTIVE June 5, an amendment of WPB Order M-28 stops present delivery of Freon 12 and other refrigerants of the chlorinated hydrocarbon group for use in comfort cooling systems, defined in the order as follows:

(ii) For the purposes of this paragraph (d) "comfort cooling system" means any system, of any size, operated or installed for the purpose of lowering the temperature and/or humidity of air in any building, room or other enclosure used as, or located in any of the following:

- Amusement parks.
- Animal hospitals.
- Auditoriums.
- Ballrooms, dancing studios, and dance halls.
- Bank and loan associations.
- Bars, cocktail lounges, and beer parlors.
- Bowling alleys.
- Concert halls.
- Funeral parlors.
- Golf clubs, country clubs, and athletic clubs.
- Hotels and apartment houses.
- Moving picture houses.
- Night clubs.
- Office buildings and offices, public or private.
- Railway, streetcar and bus stations and terminals.
- Residential buildings and dwellings of all kinds.
- Restaurants, cafeterias, and other places selling meats, food or beverages.
- Schools.
- Service establishments, such as laundries, cleaners and dyers, tailor shops, barber shops, "beauty" parlors, automobile sales and service shops, and repair shops of all kinds.
- Skating rinks.
- Stores, selling any kind of products, material, or merchandise, at retail or wholesale (excluding manufacturing establishments).

The term "comfort cooling system" shall not include (a) any such system used to air condition a building, room, or other enclosure used chiefly for purposes not listed above, or (b) any system designed, necessary and used, in substantial part for the refrigeration and storage or processing of food, ice, or other materials or products re-

quiring refrigeration, temperature control, or freedom from dust or other impurities, or (c) such part of a system as may be necessary and used for the circulation of air, or necessary and used for raising the temperature of air during cold weather to a degree which is comfortable or tolerable for persons (comfort heating).

Definite provision is made in the order to maintain refrigerant supplies in hospital air conditioning systems. Since railroad passenger cars are not mentioned in the order it is presumed that those using refrigerants of this group will continue to be supplied.

Otherwise it appears that comfort cooling systems are all covered. The only way they can maintain present operations is to keep a tight system.

CEILING PRICES REDUCED TO COVER EXCISE TAXES

CEILING prices for commercial refrigeration and commercial refrigeration apparatus have been ordered reduced by the Office of Price Administration by an amount equal to federal excise taxes which were repealed November 1, 1942. Every level of distribution is covered.

The action provides that all sellers shall reduce their ceiling prices by an amount equal to the federal excise tax previously paid on the sales of commercial refrigeration equipment under the provisions of the Revenue Act of 1941. The tax on this type of equipment was subsequently repealed by the Revenue Act of 1942.

Under the Revenue Act of 1941 a 10 per cent tax was added to the selling price on beverage coolers, ice cream cabinets, water coolers, food and beverage display and storage cabinets, ice making machines, milk cooler cabinets, refrigerators of more than 20 cubic feet storage space and designed for use with a mechanical refrigeration unit, compressors, condensers, evaporators, expansion units, absorbers and controls for refrigerating plants and systems.

(Continued on page 44)

QUESTIONS AND ANSWERS

On Interpretations and Rulings on Government Orders Covering
Refrigeration Sales and Service Bulletins

BECAUSE of the interest in Government war regulations pertaining to the refrigeration service business, **THE REFRIGERATION SERVICE ENGINEER** answers below a number of individual questions on the application and interpretation of the above regulations. The answers to these questions have been checked carefully for accuracy. However, since government regulations are subject to constant changes and modifications, we cannot guarantee the correctness of answers beyond the date of the issue in which they appear. Readers are invited to submit questions pertaining to their individual problems.

RATINGS ON PARTS

QUESTION 25: If an Authorized Service Agency is called to service equipment that has broken down, and he orders parts under the rating to which the customer is entitled, is it necessary for this customer to sign same rating, or is it necessary for him (the customer) to sign any rating? For example, if the service man is called to service a meat market and he orders a part for said machine, giving an AA-4 rating, should the market owner or manager sign any rating? The only rating that I know that he could sign would be an A-10. Is it necessary for him to sign this?

2—If said Authorized Service Agency has necessary parts in stock and he uses them on a job that is broken down, this customer being entitled to an AA-3 rating, should the Service Agency replace these parts by ordering with an AA-3 rating or an AA-4?

3—If a domestic purchaser came into a retail store and made a purchase, signing an A-10 rating, or any other rating, to which he was not entitled, causing the Dealer to sign this same rating to the Wholesaler, the wholesaler to the manufacturer, who would be at fault?

4—Has there been any provision made whereby an armature rewinding shop can get material to repair domestic mechanical refrigerator motors?—A.H.G.

ANSWER: 1—Under the conditions you describe in the first question, it would be advisable for you to secure a purchase order from the customer which would specify the classification of the work to be done. The customer would sign, but we know of no strict requirement that he extend a rating

to you on this purchase order. You would have to extend the rating to secure the parts and the purchase order would give you a record of the job as well as the signature of the customer as evidence that you extended the rating in good faith.

When a customer orders maintenance and repair parts under CMP Reg. 5 he places on his delivery order the certification as specified in the regulation. For everything except controlled materials the certification is as follows:

Preference rating — (specify rating) — MRO. The undersigned certifies, subject to the criminal penalties for misrepresentation contained in section 35 (A) of the United States Criminal Code that the items covered by this order are required for essential maintenance repair or operating supplies; that this order is rated and placed in compliance with CMP Regulation No. 5; and that the delivery requested will not result in a violation of the quantity restrictions contained in par. (f) of regulation.

2—The service agency would be entitled in this case to an AA-3 rating if it is required to secure the parts.

3—The purchaser would be at fault. However, the dealer also would have a measure of responsibility. For instance, if he knew of his own knowledge that the purchaser was not entitled to the rating claimed, or had reason to believe that such was the case, he would be at fault. If, on the other hand, he accepted the customer's claim in good faith and had no reason to believe he was not entitled to said rating, the responsibility would be wholly on the customer.

4—There is no special order extending

priority assistance for the purpose stated, but we have been informed that such needs have been fulfilled, at least in part, under the material and supply applications filed by the individual companies.

MOTOR REPAIR SUPPLIES

QUESTION 26: My trouble is being able to get electric motor brushes, starting condensers and motor starting switches. If I were able to carry these parts in the service truck I could take care of a service call in one trip on the truck and labor. As it is now, some jobs are 30 miles from the shop. I have to take them off, bring them in, pack and ship to a motor works to have a set of brushes, condenser or starting switch put in. Freight charges are \$1.20; besides there is another trip and labor charge to the customer. In other words, my truck mileage is almost double what it was a year ago. Under the above conditions I am able to take care of half as many customers.—E.M.S.

ANSWER: It is apparent that the lack of parts in your inventory, which you described in your letter, does increase service costs greatly and also it makes a serious reduction in the number of jobs you can handle under permitted truck mileage.

The only way to handle this problem on any kind of a logical basis is to secure parts to be carried in your service truck so that the work can be done on the job. Apparently this was your past custom so that inventory limitations would not prevent your continuing if you can secure the parts.

We would suggest that you do everything you can to secure these parts through your regular distributor channels. If you do not succeed, then your best policy is to take the matter up with the nearest WPB office and explain your situation fully. They should be able to help you.

REPAIR PARTS

QUESTION 27: What is the ruling on equipment used partly for food storage and partly for beverage cooling?

2—What is the ruling for obtaining copper tubing for installing used equipment?

3—How do you arrive at "beyond repair" decisions? Is it based on cost and labor involved as against replacement cost?

4—I had a case of where I gave an estimate on repairing and another service man turned it in as "unrepairable" and sold a new unit. Are we both right?

5—Can I use any of my stock not specifically obtained under P-126 rating to repair domestic refrigerators?—J.G.

ANSWER: 1—If used primarily for food storage, no other equipment being readily available for that purpose, it would come under that classification. However, it must be a bona fide use. For instance, the cooling of fruits, temporary storage of fish, game, etc., as a convenience rather than a necessity would not justify such classification.

2—To obtain copper tubing for installing used equipment, it is necessary to apply rating AA-2X, AA-3 or AA-4 as described in P-126.

3—Before the days of priorities, yes; but now, scarcity of materials and low priority ratings in some cases come definitely into the picture. In a case where new equipment is not available, repairs amounting to more than cost of replacement might be justifiable.

4—I am not at all sure that there is a clear cut "right" or "wrong" method of procedure here. You doubtless were right in suggesting repairs but the other service man got the business. Getting the business may not be the whole of such a deal, but it is an important consideration. Depending on the circumstances, the other man may run out of stock if he pursues this policy.

5—Yes, you can.

PRIORITY ON FOOD EQUIPMENT

QUESTION 28: I have been told that under a new WPB order an AA-1 priority is given for servicing equipment for preserving and storing food. Does this include butcher shops and restaurants?—E. A. B.

ANSWER: Undoubtedly your question refers to CMP Regulation No. 5 which was amended on May 14, 1943. This regulation extends priority assistance for necessary maintenance or repair of facilities required for producing any product or conducting any business. Certain products and activities are listed in the order under Schedule I (AA-1) or Schedule II (AA-2).

Under Schedule I in this regulation you will find "Industrial food manufacturing, processing, packaging, preservation and storage (except soft drinks and alcoholic beverages, tobacco and chewing gum). Restaurants, hotels, retail stores and farms are not included in this category."

You will note that restaurants and retail stores have not been extended the AA-1 preference rating. They fall, therefore, under the general extension of AA-5 preference rating for necessary maintenance or repair of their facilities. You should secure a copy of CMP Regulation No. 5 and study it.

The Question Box

Readers are invited to send their problems pertaining to the servicing of household refrigerators and small commercial refrigerating equipment to "The Question Box."

ICE-O-MATIC COMPRESSOR

QUESTION 549: We have in our shop an Ice-O-Matic conventional type, reciprocating compressor and after having removed fly-wheel, seal and bottom of crank case, we cannot figure out how the shaft is removed as there is no visible means of removing it. We assume that it screws off, but are afraid of forcing it lest we break a part. We would be greatly obliged if you can supply us with information as to how it should be done.

ANSWER: There are a number of different styles of Ice-O-Matic conventional type of compressors. Each has a little different construction, but I presume that you are interested in Model Y compressor, the first of which were manufactured around 1932.

In this compressor, the eccentric shaft and the counter-balanced eccentric are two separate parts. The former being made of steel and the latter cast iron. These parts are machined to assemble as a press fit and consequently must be assembled or taken apart with the aid of a press. A half moon key is used to keep the eccentric from turning on the shaft. This key requires special attention in installing or removing the shaft. In order to remove the shaft, it is necessary to remove the plug from the opposite end of the compressor from the seal end, and the shaft is driven through the opening left by this plug. The rear end of the shaft is larger than the part where the eccentric fits on and there is a shoulder on the shaft against which the eccentric rests.

The rear main bearing has a slot in it through which the key in the shaft may pass when the shaft is driven out. It is necessary to turn the shaft until you can see that the key lines up with this slot in the rear main bearing.

In forcing the shaft out, it would be better to arrange some means of pressing it out rather than driving it, since most of the parts in these compressors are cast iron, sharp blows on the shaft may break one of the parts and certainly may damage the end of the shaft. If it is possible to arrange

a wheel puller or a screw pressure on the end of the shaft, you would run less chance of damage to the compressor.

COPELAND MODEL I

QUESTION 550: From time to time, I have had problems answered just by reading your "Question Box." However, I would appreciate getting this information. I recently had occasion to work on a domestic Copeland which had been factory rebuilt and charged with methyl. When I was called in on the job, the brine tank leaked. I took off the entire evaporator and had the tank soldered—then reinstalled the brine tank evaporator and purged the lines and recharged the dehydrator with Silica Gel. I then added considerable refrigerant until my gauges indicated the correct methyl reading referring to the charts listed on page 80 and 81 of L. K. Wright's pocket manual, "Refrigeration Servicing."

I mixed a solution of 50-50 solox as put out by the U. S. Industrial Chemical, Inc. for the brine tank which should have been good enough for 18 degrees below zero. After everything was carefully checked, I let the machine run for several days—meanwhile, adjusting the location of the thermostatic bulb which was wedged between the strap hanger and the side of the brine tank. I also made a few minor adjustments to the automatic expansion valve. Then two things developed. If I got the evaporator cold enough to freeze cubes, the box temperature was much too cold (below 30 degrees). However, if the top two trays did not freeze solidly, then the box temperature would be satisfactory. I controlled the freezing of these trays by moving the thermostatic bulb up or down between the strap support and the brine tank.

The second development happened several weeks later when I was called back to the job and found that the evaporator was distorted and beyond repair. It looked as if high pressure gas was exerted from the inside of the tank. At present, the box is shut down.

One other thing—the old original thermo-

stat was replaced with a Ranco and the original hole in the brine tank was capped. When the brine solution was placed in the evaporator, the tank was then capped. All this took place at room temperature. Now can you tell me what is wrong?

ANSWER: Apparently you did too good a job on the Copeland refrigerating unit when you are able to get such a low temperature out of it, and such efficient operation out of it.

I am at a loss to explain why such a low temperature would develop in the refrigerator, unless it was due to the type of brine solution you used. The low freezing temperature of this solution may permit a more rapid circulation of the brine within the tank—thus, create a more efficient transfer of heat through the brine to the refrigerant.

It would not be advisable to change this brine because in the present set-up, you have reached a very efficient condition. However, to prevent the box from getting so cold while at the same time maintaining a cold enough evaporator temperature to freeze ice, I would suggest baffling the air passage around the tank. If through restricting the flow of air over the tank, you can cut down the air circulation, you will be able to obtain a higher temperature in the food compartment.

The distortion of the tank is undoubtedly due to a refrigerant leak in the submerged coil inside the tank. This was rather a common happening in the days when brine tanks were our principal type of evaporator.

It will be necessary to open the tank, repair the coil and resolder the tank. If the tank is now badly distorted, it is very unlikely that you will be able to obtain a satisfactory appearing job. This kind of repair is always difficult under the best of conditions, but where the tank is badly distorted, your difficulties are multiplied. Perhaps it would be well to replace the brine tank with a dry type of evaporator, providing you can obtain one.

CONNECTION LOOSENS PERIODICALLY

QUESTION 551: I am experiencing a considerable amount of trouble with some installations that I am now servicing in this territory. They were installed during the past two years in various types of milk coolers and reach-in cabinets.

The trouble that I am having is with the flare nut that holds the expansion valve to the coil. This nut backs off or comes loose

and lets the gas leak out. I have not had this trouble with any other coil except with this make, which is the Filter-pure Wall Type Blower Coil made by the Betz Corporation at Hammond, Indiana. These coils are installed in milk storage rooms, using a Mills refrigerating unit with F12 refrigerant, in walk-in coolers, in restaurants and in stores with Mills machines using F12 refrigerant, and also one with a Universal machine using Methyl refrigerant. All carry about 36° to 38° temperature.

I am sending folder of this unit, and as you will notice, I have designated the place that the valve is located in the unit, and I am wondering if you can give me some information and advice as to how to keep this trouble from re-occurring. I have tightened these nuts on some of these as many as two or three times, and in about sixty to ninety days, the nut backs off and the gas escapes again. The type valve that was used on most of these jobs was a number 897 Detroit Diaphragm Thermostatic Expansion Valve.

Another service man advised me that possibly this trouble was caused from the valve being too small and the expansion and contraction being greater on the small valve, so I have changed the valve on some of these installations using the 673 Detroit expansion valve with which I have never experienced this trouble, but I find that it does the same as the other valve. The super heat on the valve that I used was 10° with 55 pounds maximum operating pressure.

If you can give me any idea about this trouble, I would appreciate it very much and I would also like to hear from some of the other service men if they are experiencing this same kind of trouble. Incidentally, the nut that I am referring to is a short frost-proof nut, and the tube on this coil is copper.

ANSWER: I am not so sure that I know the answer to your trouble with the Filter-pure Wall Type Blower, but I am going to give you a couple of thoughts that I have on the matter.

The first is that I believe this trouble is due to expansion and contraction at the connection itself. One way of overcoming it would be to use a sweat fitting inserted in the valve and into which the expansion coil inlet can be soldered. This would eliminate the nut at this point, and of course, overcome the trouble of the connection loosening. The size of valve or the type of valve used should have no bearing whatsoever on this trouble.

Mineral Wool; Loose, Granulated, or Felted in Low-Temperature Installations

NOTE: This information on mineral wool insulation will be appropriate at this time because a number of concerns are building their own frozen food lockers or cold storage rooms. Mineral wool, which is not rationed and hence is available for such construction, makes a very adequate insulating material. While the average service man may not be interested directly in construction details, this knowledge will provide him with a better insight into the requirements of servicing such plants.

PUBLICATION of commercial standards CS105-43 recently was announced by the National Bureau of Standards, United States Department of Commerce, in co-operation with the Industrial Mineral Wool Institute, 441 Lexington Ave., New York, N. Y. This Standard was effective for new production from March 1, 1943. Single copies of the Standard will be furnished free on request addressed to the Institute. The following is an extract from the booklet:

Commercial Standard CS105-43

Purpose

1. The purpose of this commercial standard is (a) to establish minimum specifications for insulating low-temperature areas with mineral wool for the guidance of manufacturers, distributors, installers, contractors, and users; (b) to avoid delays and misunderstandings; and (c) to provide a basis for guaranteeing compliance.

Scope

2. This standard covers minimum physical and chemical requirements of loose, granulated, and felted mineral wool for use in insulating low-temperature areas. It includes thickness of insulation required for various operating temperatures, specifications for auxiliary materials, tests, installation requirements, and method of guaranteeing compliance with the standard.

Material¹

3. Insulation.

3a. *Mineral wool.*—The insulation shall be of mineral wool manufactured from rock, slag, or glass. It may be in loose, granulated, or felted form and shall meet the following requirements:

(1) The thermal conductivity (k) shall not exceed 0.27 Btu per hour per square foot per degree Fahrenheit temperature difference per inch thickness at a mean temperature of 50° F. as determined by the procedure recommended by the National Bureau of Standards. (See Journal of the American Society of Heating and Ventilating Engineers, vol. 26, No. 7, October, 1920.)

(2) The installed density, as recommended by the manufacturer, shall not be less than the minimum required to comply with the 0.27 (k) specified above.

(3) The sulfur content shall not exceed 0.75 percent by weight when determined by the evolution method.

(4) The mineral wool shall contain no substance that will support mold growth or vermin. It shall be odorless and non-combustible.

4. Auxiliary material.

4a. *Asphalt.*—Asphalt shall be odorless, with a softening point of from 180° to 200° F., penetration at 77° F. of from 20 to 35, and a ductility at 77° F. of not less than 3. The following American Society for Testing Materials standard test methods for asphalt shall be used:

(1) Softening point, A. S. T. M. Designation D 86-26 or later revision.

(2) Penetration, A. S. T. M. Designation D 5-25 or later revision.

(3) Ductility, A. S. T. M. Designation D 118-39 or later revision.

¹ During the war emergency period, some material specified in this standard may be considered critical and therefore unobtainable. For example, "Finish" as covered by paragraph 10 calls for the use of metal lath as a support for interior plaster. Should metal lath not be available owing to Government order, an alternate material may be used if it provides a strong key for the application of plaster.

4b. *Asphalt primer*.—Asphalt primer shall meet the requirements of A. S. T. M. specification D 41-41 or later revision.

4c. *Building paper*.—Building paper shall be slater's felt or its equivalent. It shall be vapor permeable but water repellent, that is, it shall shed water but shall allow the passage of moisture in vapor form.

4d. *Cement*.—Portland cement shall meet A. S. T. M. Specification C 150-41 or later revision.

4e. *Hydraulic lime*.—Hydraulic lime shall be type a, high calcium hydraulic lime meeting A. S. T. M. Specification C 141-42 or later revision.

4f. *Metal*.—Steel and other metals used shall be galvanized, sherardized, or otherwise well protected against deterioration from corrosion.

4g. *Wood*.—The lumber shall be kiln dried, Douglas fir, yellow pine, cypress, or other suitable species, impregnated or treated to resist moisture.

Construction

5. *General*.—All material used in insulating low-temperature areas in accordance with the requirements of this standard shall be properly installed to give satisfactory performance and long service. The specific forms of mineral wool insulation, i.e., loose, granulated, or felted, shall be installed at uniform density as recommended by the individual manufacturer.

Refrigerated Spaces

6. All refrigerated compartments shall be insulated with mineral wool to not less than the thickness specified in Table I for the stated operating temperature.

TABLE I. MINIMUM THICKNESS OF MINERAL-WOOL INSULATION REQUIRED FOR VARIOUS OPERATING TEMPERATURES

Temperature, ° F.	Thickness, in.
45 and above	2
35 to 45	3
20 to 35	4
5 to 20	5
-5 to 5	6
-20 to -5	8

7. Preparation of Surfaces.

7a. *Masonry or plaster surfaces*.—When a membrane-type vapor barrier is to be applied the surfaces shall be roughened to insure a good mechanical key and made true and even by back plastering. Surface shall

be free from paint, oil, dust, dirt, soot, or any other material that might prevent a satisfactory bond. Immediately preceding the application of the plaster, the wall shall be thoroughly washed with clean water and allowed to dry until uniformly damp and suction is restored. The plaster shall be applied in one or more coats to $\frac{1}{4}$ -inch minimum thickness at all high points, and floated with a straightedge until smooth. Back plaster and interior finish shall be mixed in the proportion of one part portland cement to which not more than 20 percent by dry weight of hydrated lime has been added to three parts of mason's sand or one part high calcium hydraulic hydrated lime to three parts mason's sand by volume. Water that is free from foreign matter shall be added in the minimum amount to produce required workability.

7b. *Asphalt primer*.—All masonry or plaster surfaces to which a membrane-type vapor barrier is to be applied shall be primed with two coats of asphalt primer brushed or sprayed. The surfaces shall be thoroughly dry before priming, and the first coat of primer shall be allowed to dry thoroughly before the second coat is applied.

7c. *Wood surfaces*.—All cracks, knot-holes, and other open defects in wood surface shall be blocked off or covered before the vapor barrier is applied.

8. Vapor barrier.

8a. In order to limit the infiltration of air and moisture into the refrigerated space, a suitable vapor barrier (moisture-vapor proof seal), having a permeability not to exceed the equivalent of 1 gram of water per square foot per day under a vapor-pressure difference of 17.1 millimeters of mercury, shall be placed against the warmer side of walls, floor, and ceiling. The vapor barrier shall be installed continuously and carefully bonded to the supporting construction. The vapor barrier shall provide effective resistance against moisture-vapor entry under the given operating conditions and may be made in accordance with one of the following methods:

(1) Two (2) hot-mopped layers of asphalt properly heat bonded with open-mesh fabric or 15-pound saturated rag felt between.

(2) One (1) hot-mopped layer of asphalt into which a plain or creped duplex paper shall be firmly and uniformly pressed.

(3) Two (2) hot-mopped layers of asphalt properly heat bonded.

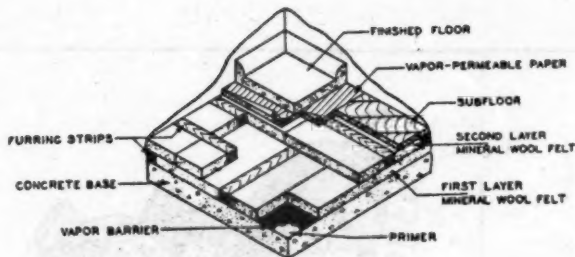


Fig. 1 (Left)—Floor construction for cross-furring.

Fig. 2 (Right)—Ceiling construction for cross-furring.

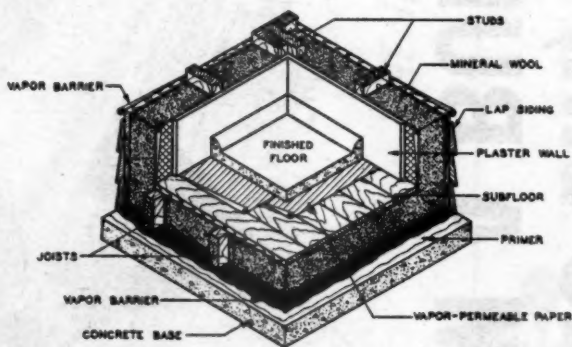
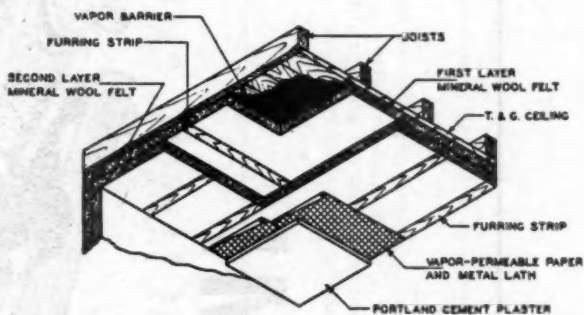
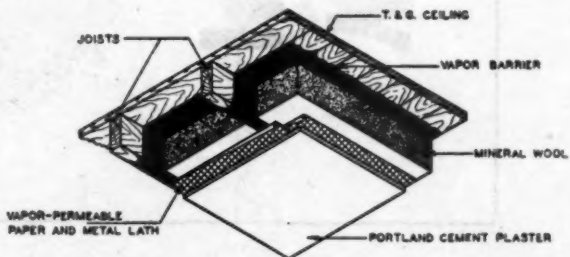


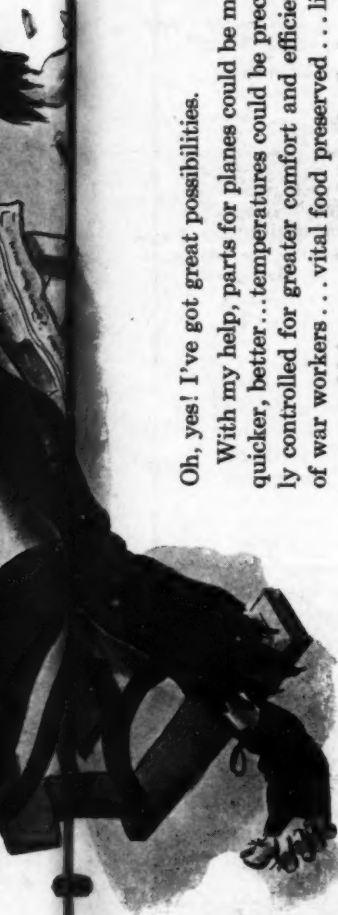
Fig. 3 (Left)—Joist construction for floor.

Fig. 4 (Right)—Joist construction for ceiling.



**YES SIR,
I'M A BUM!**





Oh, yes! I've got great possibilities.

With my help, parts for planes could be made quicker, better...temperatures could be precisely controlled for greater comfort and efficiency of war workers...vital food preserved...lives even, could be saved with the blood plasma I could help refrigerate....

But I'm not doin' nuthin. I'm just lyin' around. Just an "empty" cylinder...waitin' to rust.

So what? *

THE IDLE "FREON" CYLINDER



This is waste. No one approves of it. Least of all, those in the industry whose business life depends upon the use and sale of "Freon" refrigerants. Ferret out all unused cylinders. Give no storage room to empties. Ship idlers back for important war work to: Kinetic Chemicals, Inc., at Carney's Point, N. J.

KINETIC CHEMICALS, INC., MAKERS OF "FREON" SAFE REFRIGERANTS



"Freon" is Kinetic's registered trade mark for its fluorine refrigerants

Fig. 5 (Right)—Wall construction for exterior masonry walls.

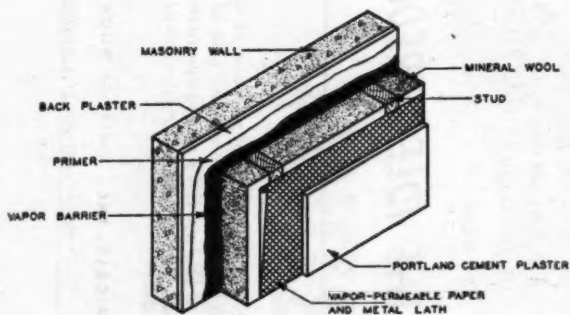
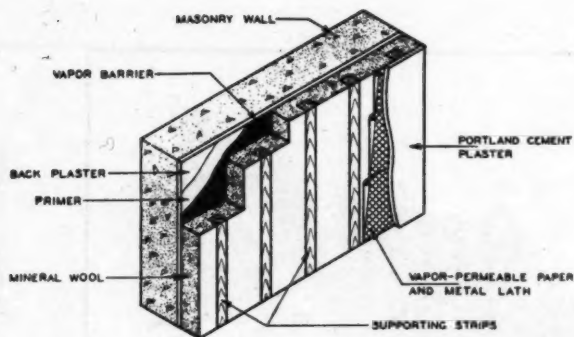
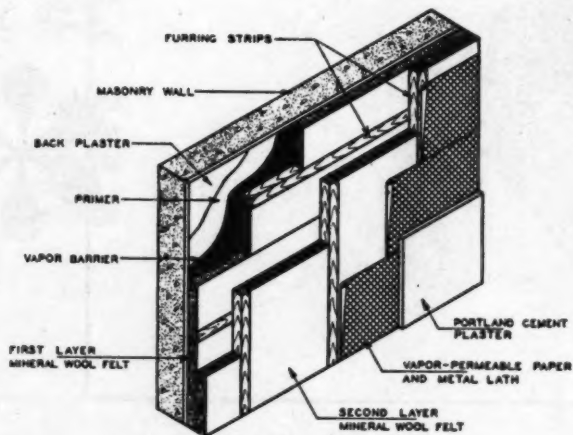


Fig. 6 (Left)—Stud construction for interior enclosing wall.

Fig. 7 (Right)—Cross-furring construction.



**Survey Indicates Real Crisis In Refrigeration
Breakdowns May Come This Summer**
*Only 43% 'Equivalent Manpower'
Left To Handle All The Jobs*

Here are some thoughts after reading the headline above. We know they make sense and will make dollars for the thinking refrigeration service engineer.

1. Much emergency service will be necessary to keep present equipment in operation.
2. The time of the men "left" is valuable and can be made very profitable . . . but it is necessary that each man cover and *finish more* service jobs per day.
3. Less call-backs, less labor, less tire wear and less gasoline expenditure are important factors nowadays and will cut costs per job.
4. Many jobs are moisture cases that begin to kick-up before there's much moisture in them. Put in THAWZONE and go on to the next job. Nine out of ten of these jobs will be finished with the *one* call. If, occasionally, another "shot" is necessary to take care of unusual moisture, give it. This will be the exception, however.

RESULT:

By consistent use of THAWZONE, you can cover more calls per day and do a thorough job at the same time. Thousands of units are running perfectly after being treated with THAWZONE years ago. Its action is permanent, because it *destroys moisture and neutralizes acid by chemical action.*



HIGHSIDE CHEMICALS CO.
195 Verona Ave. Newark, N. J.



(4) Moisture-proof preparations (hot or cold) for trowel, spray, or other type of application.

9. *Supporting construction.*—The supporting construction shall be one of the types covered by paragraphs 9a to 9b (4) inclusive. In selecting the type of construction to be used, consideration should be given to the operating temperature that must be maintained, the necessity for close temperature control, and the cost of the particular construction involved.

9a (1). *Cross-furring construction.*—This construction shall consist in cross-furring two or more layers of treated wood strips at right angles, as illustrated by Fig. 1 for flooring and Fig. 2 for ceiling. Each course of furring strips shall be of uniform depth.

9a (2). *Joist construction.*—This construction shall consist of treated wood joists having a depth equal to the required insulation thickness, as illustrated by Fig. 3 for flooring and Fig. 4 for ceiling.

9b. Walls.

9b (1). *Spaced construction.*—This construction shall consist of either steel or

treated wood supporting strips of a depth less than the required insulation thickness, and shall be one of the following methods:

(a) For exterior masonry walls, the construction shall be as illustrated by Fig. 5.

(Similar drawings are shown illustrating construction for exterior and interior wood walls containing included studs on warm (outer) side; and for interior enclosing wall with exposed studs on warm (outer) side. In each case, the vapor barrier, mineral wool, portland cement plaster, vapor permeable paper and metal lath, and supporting strips are the same as shown in Fig. 5.)

9b (2). *Stud construction.*—This construction shall consist of treated wood studs having a depth equal to the required insulation thickness, as illustrated by Fig. 6.

9b (3). *Cross-furring construction.*—This construction shall consist in cross-furring two or more layers of treated wood strips at right angles, as illustrated by Fig. 7. Each course of furring strips shall be of uniform depth.

9b (4). *Double masonry construction.*—This construction shall consist of two self-

(Continued on page 46)

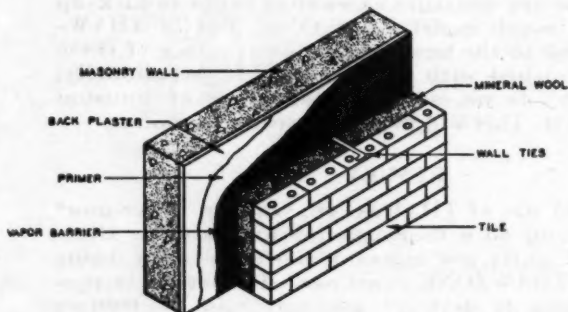


Fig. 8 (Left) — Application on double masonry construction.

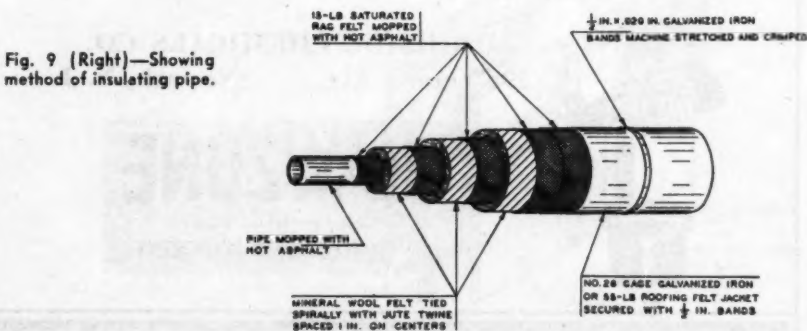
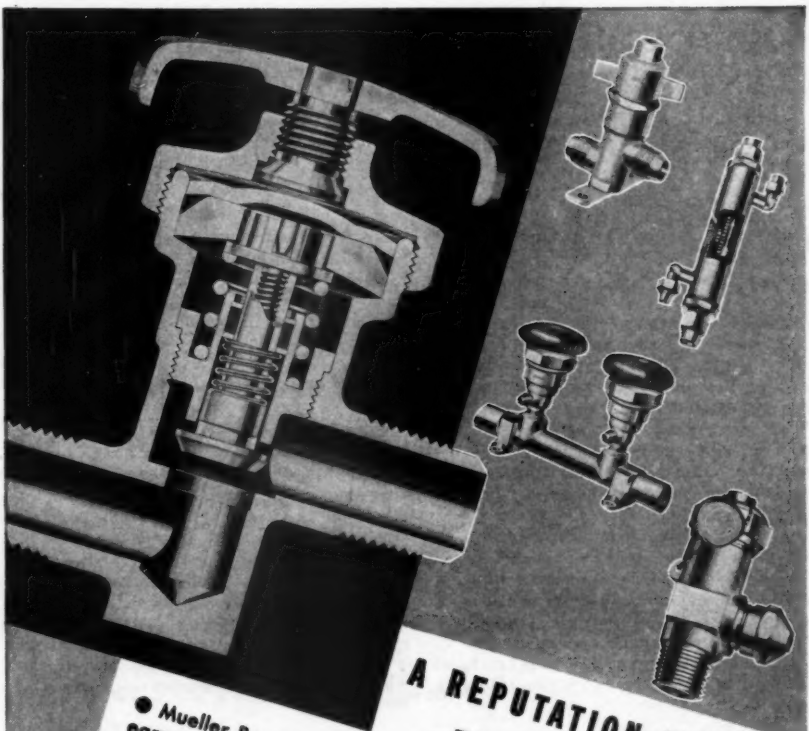


Fig. 9 (Right) — Showing method of insulating pipe.



A REPUTATION WORTH FIGHTING FOR!

● Mueller Brass Co. valves, fittings and accessories have a well earned reputation and are consequently doubly desirable at a time when refrigeration products are scarce and becoming scarcer with each passing month.

We can still supply many of the items you may need and to the extent that we are permitted, we shall continue to produce standard essentials for the Refrigeration Trade.

We sincerely hope that in the shortest possible time we can once more devote our full manufacturing facilities to serving the happier needs of the American market of a world at peace.

Mueller Brass Co. products have a built-in reputation for long life and quality. If you have a problem, write us. We'll do our utmost to help.

MUELLER
BRASS CO.
PORT HURON, MICH.

Refrigeration Training at Camp Lee

By Master Sergeant Elton W. Mattson
Instructor, Refrigeration School, Quartermaster
Replacement Training Center, Camp Lee, Va.

APRIL 1, 1941, is a date to be remembered at Camp Lee, Virginia, for on that day the Quartermaster Replacement Training Center's Refrigeration School started its first classes in the second floor of a barracks, using foot lockers as benches, and the supplies, equipment, and texts consisted of but one Army technical manual, "Subsistence Bulletin 21, Refrigeration."

The instructional staff included two officers who were very enthusiastic about the importance of refrigeration in the Army and the need for training soldiers to become skilled in handling refrigerating equipment, and two noncommissioned officers capable of doing their task as assistant instructors.

Thirty-eight student trainees comprised the first class, all of whom were eager to learn more about refrigeration. Some had a background of training and experience.

With the newly-organized Camp Lee band practicing next door and with men tramping

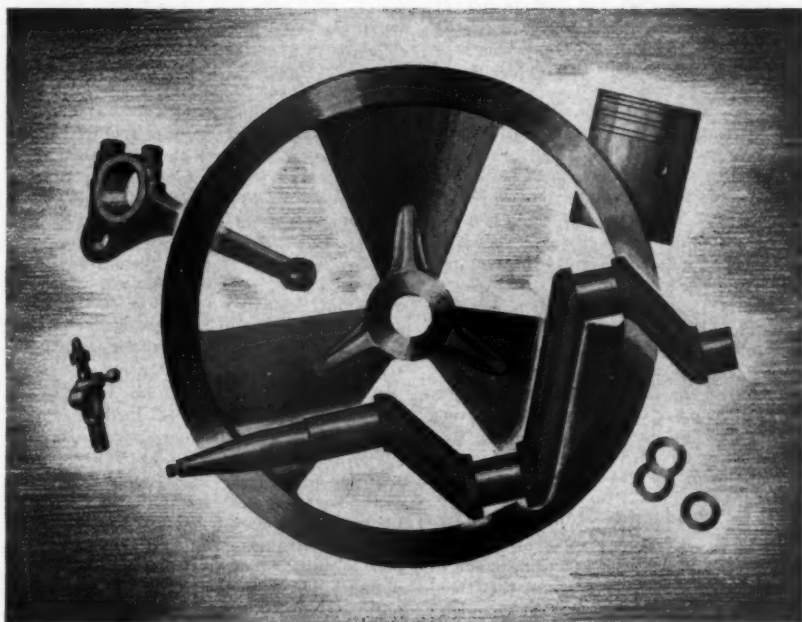
through the barracks, instructing trainees was rather difficult, and the need was seen for better housing facilities. The new location was a small office building about 15 by 25 feet. Here the school started to take shape.

Early Training Period

The early weeks of the training period were spent in intensive review of the fundamentals of mathematics, physics, and chemistry; the mechanical principles to cover the operation phases of refrigeration; and instruction on the handling and inspection of perishable food supplies. These topics were covered, to the best of the instructors' ability, with the limited textbooks and equipment on hand, and following the outline of the tentative training schedule that had been produced by the office of the Director of Supply Training. The schedule was one of



A Classroom lecture at the Camp Lee QMRTC Refrigeration School. Master Sergeant E. W. Mattson, of the instructional staff, is explaining some fundamental points to a group of trainees, while other students are doing practical work at the tables to the right. Behind Master Sergeant Mattson is one of mobile tractor-trailer refrigeration units that can accompany our fighting forces to any combat zone.

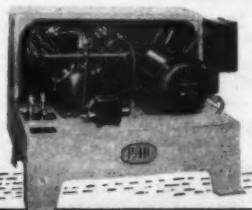


ALWAYS DEMAND *Genuine*
PAR REPLACEMENT PARTS!

Remember—PAR Condensing Units now in service are precision-built . . . designed to deliver many years of economical, dependable performance. To maintain that same high efficiency, check your customer's Condensing Units regularly. Replace questionable parts NOW, through PAR'S Exchange Policy of valve plates and compressor bodies. Write for complete details today.

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Commercial Refrigeration
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DIVISION



LYNCH MANUFACTURING CORPORATION - DEFIANCE, OHIO U. S. A.

the many prepared for the various schools during those early, hectic days of Camp Lee's re-birth, once more to train American soldiers en route to the battlefields of the world.

Equipment and supplies were slowly finding their way to the school, arriving there by various ways, and, upon arrival, being put immediately to the best of use. Equipment, that for many years had had its own place in the junk yards and dump grounds in the vicinity of Camp Lee, soon started to be of very practical importance to the instruction work of the school.

It was at its new location that the first graduation took place. The two assistant instructors were assigned with the men and helped form one of the first refrigeration companies of the Army. Two weeks later, when the new classes were ready, two former students were assigned as assistant instructors to help carry on the development and advancement of the school.

Production Starts

With more equipment coming in, some old and some new, with schedules being made to take care of the expanding classes, the school was really starting to produce. The following weeks' training classes were interspersed with actual functioning periods at the camp refrigeration plant and inspection tours of cold storage warehouses and local ice plants, all of which were aiding the students to attain more knowledge, both theoretical and practical, in the refrigeration field.

With the altering of the technical training program, and the expansion of the school student body, new schedules, including more practical work phases particularly laboratory and shop problems, were in evidence. The school moved from its cramped quarters to a larger building, where a shop area was arranged. Text and reference books were needed whereby students could do advanced study, therefore manuals were compiled by the school staff, mimeographed and issued to the students.

The Refrigeration School, no longer in its infancy, now was training men as refrigeration mechanics for mobile and fixed units, as well as training men to be cold storage operators, inspectors, and handlers of perishable supplies. Actually two schools were in existence. New programs had to be drawn to cover fully both of the large important fields of refrigeration and subsistence.

Quarters again were inadequate and the

instructional staff was too limited. To solve the problem of the crowded classroom and shop, tents were erected and used as additional classrooms, and students with experience in their specialized lines were used as assistant instructors.

Again a new location was found for the Refrigeration School, with larger shop surroundings and greater facilities for practical work. In addition to this, a new table of organization was formed, expanding the instructional staff. It was at this time that the subsistence section of the school was quartered in a separate building, adjacent to the mechanical section, thus two Refrigeration Training Schools were evolved from the one-time single-barracks-quartered school.

Various types of visual aids were being produced in both schools, including cut-away models of small domestic compressors, evaporators, condensers, various types of switches and valves, large scale diagrams of expansion valves, service valves, relays, simple refrigerating systems, cold storage warehouse, illustrated shipping tickets and numerous other diagrams, all very useful in aiding students in their effort to grasp this quite technical and involved subject.

Mechanical Section Expands

The field of instruction in the mechanical section also was expanding. Lectures and practical work phases were being conducted on mobile equipment, which the Army was starting to utilize more and more. The portable prefabricated cold storage unit was also used for training in the advancement and better qualification of Army refrigerating mechanics. These mechanics, well trained in their specific lines, were forming Quartermaster refrigeration companies, and replacing men in existing refrigeration companies of the U. S. Army throughout the world.

As a result of the call for more refrigeration mechanics in the field and a change in the demand for men trained in methods of handling perishable commodities, subsistence training was allocated to the warehousing school. All of the time and equipment of the Refrigeration School were utilized in the training of better refrigerating mechanics. Most of the students entering the school were men very desirous of learning refrigeration, some with practical knowledge to aid them in the classes and practical work, others with not as much practical work, but with initiative and a willingness to learn. Along with the men having civilian refrig-



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PEAK PERFORMANCE

*before
 during
 after
 ...Always*

SPORLAN

VALVES

* In addition to producing valves for Army and Navy refrigeration applications and for air conditioning and process cooling in war plants we are also producing sub assemblies for the radio compasses used on Army bombers, transport and cargo planes.

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SPOEHRER-LANGE CO.
 3725 COMMONWEALTH AVE., ST. LOUIS, MO.

eration experience were some with no previous experience in the field. The latter were the ones that improved and bettered our training methods and aids, for we had to create in such men a decided interest, and then carry forth the duties of teaching a subject highly important to the men, and vital to the Army with its millions of tons of food requirements.

The school, now in its sixth location, bigger and better than ever before, illustrates the advancement and progress of the Quartermaster Replacement Training Center at Camp Lee, Virginia, and that of Army refrigeration.

A student upon entering the school first gets a basic knowledge of the theory of refrigeration, then advances into further studies of practical refrigeration, cold storage subjects closely interlocked with the mechanical phase, and artificial ice making, with laboratory and shop problems coordinating with the theory and practical work taught in the classes. Some of the equip-

ment now in use consists of commercial and domestic units, prefabricated portable cold storage units, and a 3.6-ton portable ice plant, all used to the utmost in our extensive and intensive training program.

The genius of the American refrigeration engineers was well illustrated in France during the World War, where we operated at Gievres the largest refrigeration plant in the world.

After the plant was completed, it was ascertained that the French possessed no refrigerator cars, and tonnage space from the United States was too limited to permit shipment of American-built refrigerator cars.

How was the problem solved? They simply reduced the meat products to zero temperature, sealed the French box cars as thoroughly as practicable, and thereby permitted the meat to act as its own refrigerant. It was found to be in perfect condition at the end of three to four weeks of travel and delay in delivery. Nothing stops Americans!

Air Conditioning Controls Temperature in War Plant

AIR conditioned temperature and humidity which doesn't vary by more than one degree over 24 hours is being maintained at the new electronic tube plant of the Westinghouse Company at Pittsburgh, Pa., currently making the precision instruments and devices used for "Radar" enemy aircraft interception.

At the Westinghouse laboratory where the delicate mechanisms responsible are produced, air conditioning, surgical cleanliness and "artificial weather" are combined to make certain that every electronics tube goes out absolutely devoid of dust or moisture which might interfere with its precise work later on. When many of these devices will be transported to foreign soil to protect our expeditionary forces, the importance of perfectly functioning tubes can be seen.

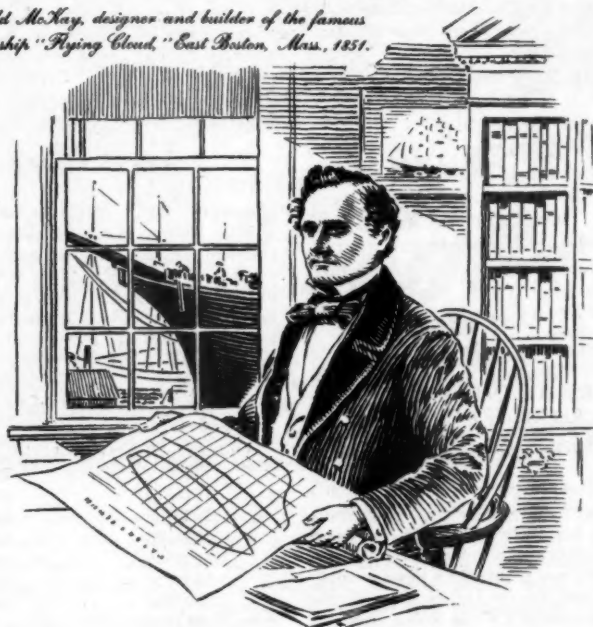
All electronic tubes are manufactured in a glistening white laboratory at Westinghouse; floor, benches, worktables, walls and all equipment used enameled a clean white. No dusty surfaces are allowed to accumulate whatsoever. The scores of deft-fingered women and men who assemble and seal the tubes are likewise dressed in white,

and wear white gloves interchangeable from hand to hand. All heat-requiring operations are sealed in to prevent carbon or sooty smoke to get loose in the laboratory atmosphere.

Twelve tons of air conditioning, closely controlled by means of a series of thermostats located around the walls, over the worktables and everywhere in the laboratory, provides the cooling. For most purposes the room is kept at a precise 78 degrees dry bulb temperature with around 45 per cent relative humidity; judged best to keep perspiration or other soil away from the tiny filaments in the high power radio tubes. There are no drafts in the room, the cooled air being distributed through many small outlets evenly over the space, and taken out as smoothly by floor-level exhaust fans of low velocity. The refrigerating equipment, consisting of a blower, cooling coils, heating coils, air washer and filter, is equipped with a spare electric motor to keep it in operation if the other should break down. One of the most important of new defense innovations is thus "protected in the cradle."

THE STANDARD OF *Enduring Craftsmanship*

Donald McKay, designer and builder of the famous clipper ship "Flying Cloud," East Boston, Mass., 1851.



The American Clipper ships designed and built by Donald McKay, "the most famous clipper shipbuilder of his time," were the fastest, the sturdiest and perhaps the most beautiful things that ever sailed the seas. Boiling along at 18 miles an hour, a speed of which no steamship of that day was capable, they were the ideal of applied art and a sheer delight to the eye.

Proud indeed may be the craftsman who knows instinctively that his product possesses those elements of craftsmanship which belong always to the thing absolutely fitted for the purpose it was designed to fill.



EXTRA DRY ESOTOO, V-METH-L AND METHYLENE CHLORIDE

	<p>"VIRGINIA" REFRIGERANTS AGENTS FOR KINETIC'S "FREON-12"</p> <p>VIRGINIA SMELTING CO. WEST NORFOLK, VIRGINIA</p>	
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HOW TO LOSE THE WAR SIGN

(Continued from page 21)

7. Join the AWOL Club and encourage others to join. Should the Japs and Germans win, you could then wear the Iron Double Cross.

8. Stay out late every night. Raise lots of Cain. You will have plenty of time to sleep on the job the next day."

In this way, the sign humorously touched upon each habit or human failing which contributes to slowed up work and production. It instantly became a quiet reminder which any worker can appreciate—and much better employee cooperation was received after it was placed on view.



DELCO RELAY ON HOUSEHOLD REFRIGERATOR

(Continued from page 14)

operation takes place in from one to five seconds depending on the design and application. Shorter starting periods are desirable on motors which accelerate rapidly and longer periods are required on heavier applications. After the motor is started, the current decreases to a value which under all normal loads is sufficient to hold the starting contacts open and not high enough to cause the thermal element to expand a sufficient amount to open the main winding contacts. When the line current is removed, the thermal element will cool and contract and reset the starting contacts after a few seconds.

If an attempt is made to restart the motor before the starting contacts have reset, the main winding locked rotor current is high enough to trip the relay overload contacts "B" and "M" (Fig. 3) in a few seconds and open the line circuit.

After a period of one quarter to one minute, depending upon the design, the thermal relay will automatically reset both starting and overload contacts and restart the motor. This automatic operation takes care of short period power failures which allow the motor to stall but are not long enough to permit the starting contacts to reset.

Heavy motor overloads will cause the same sequence of operations to take place. The overload contacts "B" and "M" will trip and open the line circuit, then the motor

and relay will cool and the relay will reset both sets of contacts automatically. If the overload is due to some temporary condition which is relieved after a short period of time the motor will continue to operate in the normal manner. If, however, the overload is permanent, such as a tight bearing which stalls the motor, the relay will automatically cycle at a rate which will hold the motor winding temperature within safe limits and prevent motor burn-out.

Service Instructions

This relay is serviceable by complete replacement only. Order replacement relay by the part number which will be found stamped in the outer bakelite housing encasing the relay assembly. When replacing old style relays (see part numbers following), or when one relay lead terminal connection is marked "L2," or when relay part number has letter "Y" prefix be sure to connect relay to refrigerator circuit using "Terminal Connection Plate" furnished with replacement relay.

Old Style Relay	Replacement Relay
1069011	5339204
1075975	5339207
1079800	5339201
5301120	5339203
5302950	5339205
5305725	5339206
5305990	5339202
5314720	5339205
5323555	5339201



CEILING PRICES REDUCED

(Continued from page 24)

The amendment provides that the presently established maximum prices, for others than manufacturers, must be reduced by the amount of the tax when it was shown as a separate item on the manufacturer's invoice or by 1/11 of the presently established ceiling of the seller where the tax was not shown as a separate item on the manufacturer's invoice. In the latter case the reduction in maximum price (established by General Maximum Price Regulation) will include any mark-up on the tax taken by any seller beyond the manufacturer.

The action is not applicable to inventories in the hands of all sellers on May 10, 1943, originally purchased tax paid from the manufacturer.



**"LIKE A RELAY RACE
It takes
FOUR...
to win this war"**

...says Harmon Anderson, a hard-working Brunner craftsman.

"... and America HAS that winning combination! Our armed forces, government, war workers and civilians... each is helping the others in the race to Victory!

"Lacking ANY one of these four, we'd never make the grade. That's why we Brunner workers feel we're part of a championship team... and we CAN'T let the other fellows down!"

You men of the Food Industry are in on this team, too! Food is fast becoming precious... and to let any of it spoil through lack of proper refrigeration is not only unwise but un-American!

To meet the urgent demand for all-important condensing units, Brunner is going

all-out to help you do the job you want to do. A great deal of the credit goes to the Brunner employees who gladly give all they can... in labor and in time... to produce unit after unit in unprecedented volume.

The years of experience and uncanny skill possessed by these Brunner workmen stand them in good stead today as the food industry calls for more—and yet more—dependable and economical Brunner Condensing Units.



COMMERCIAL REFRIGERATION

BRUNNER MANUFACTURING CO., UTICA, N. Y., U. S. A.

MINERAL WOOL IN LOW TEMPERATURE INSTALLATIONS

(Continued from page 36)

supporting masonry walls, with the enclosed air space completely filled with insulation, as illustrated by Fig. 8.

10. *Finish.*—The interior finish to be used is governed by the type of supporting construction employed. The finish recommended for wood or steel supporting construction is a layer of vapor-permeable paper and metal lath covered with portland cement plaster $\frac{1}{2}$ inch thick, or a layer of vapor-permeable but water-repellent building paper covered with square-edged sheathing.

Pipe Lines

11. When cold pipe lines, including flanges and fittings, are insulated with felted mineral wool, the insulation shall be built up to not less than the thickness specified in Table II for the required operating temperature.

TABLE II. MINIMUM BUILT-UP THICKNESS OF MINERAL-WOOL INSULATION REQUIRED FOR VARIOUS OPERATING TEMPERATURES

Temperature °F.	Thickness in.
45 to 15	2
15 to -5	3
-5 to -20	4
-20 to -40	5
-40 to -60	6

12. *Preparation of surface.*—All surfaces shall be thoroughly cleaned and dried before insulation is applied, and, once installation has begun, the system shall not be put into operation until the application has been completed. Pipes and other equipment to be insulated shall be relocated, if necessary, to provide an uninterrupted clearance around the finished insulation of at least 4 inches in all directions. Low-temperature pipes shall not be located adjacent to heated surfaces. Pipe covering subjected to abrasion shall be suitably protected.

Complete instructions are then given on the application of the insulation to pipes and fittings. Fig. 9 shows the details of this application; how several layers of insulation are applied along with moisture barriers and protective covers. The method of end sealing of the several layers is illustrated, as well as the insulation of fittings and hangers. Specifications on the finish and painting of the finished insulation are given.

REFRIGERATION WAR COUNCIL MEETS IN WASHINGTON

THE National Refrigeration War Council held a meeting in Washington, May 20 and 21, for the purpose of impressing upon official Washington the dangers of nation-wide refrigeration failures this summer. The Council, directed by John Wyllie, chairman, interviewed executives of the War Production Board in regard to the production and a more liberal distribution of refrigeration parts. They also contacted representatives of Selective Service on the possibilities of obtaining more deferments for refrigeration service men.

Charles C. E. Harris of Cambridge, Mass., Secretary of the Council, reviewed in some detail the points made by Paul B. Reed in his address on the coming crisis in refrigeration service engineering at the industry meeting held in Chicago, April 14.

According to Lt. Col. Griffith, the Selective Service Headquarters has done all that can be done short of an act of Congress. Col. Griffith pointed out that refrigeration service men were on the list of deferrable essential workers and from that point it is up to local draft boards, and if they choose to disregard this list, nothing much can be done about it, according to Col. Griffith.

Sterling Smith, chief of the Refrigeration and Air Conditioning Section, and R. W. Charles of the Industrial Machinery Division, War Production Board, expressed their desire to cooperate to the limit of their ability in making available materials and supplies needed by the industry.

As a result of these interviews, it is the opinion of members of the Council that much remains to be done, especially with the War Manpower Commission, to arouse officials in Washington to the dangers of food spoilage as a result of probable refrigeration breakdown this summer.

A later meeting of the Council was held in Cleveland in conjunction with the spring meeting of the American Society of Refrigerating Engineers, at which progress made to date was discussed and plans for future action were considered.

\$\$\$

E. F. Rhodes
Wichita, Kans.

I really get a lot of good out of your "Service Pointers," although I think it is the duty of all readers to exchange their ideas for the ones they read.

Temprite

INSTANTANEOUS LIQUID Coolers

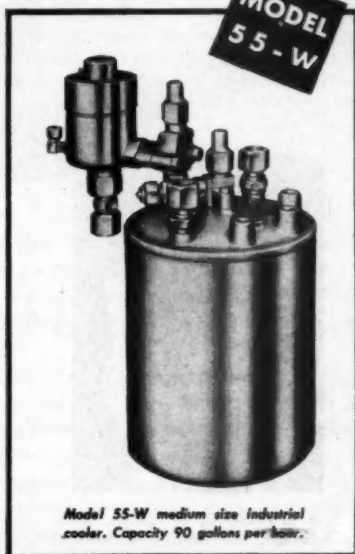
TYPICAL EXAMPLES OF WAR INDUSTRY APPLICATIONS ARE THE COOLING OF—

- 1 **Water** for aluminum alloy quenching baths, spot welder tips, war plant cafeterias and food processing.
- 2 **Light oils** for machine tools, tool tempering baths, food processing, etc.
- 3 **Alcohol** for aluminum alloy rivet and casting quenching baths, control testing installations, etc.
- 4 **Brines** for low temperature baths for age treatment of steel, low temperature circulating systems.
- 5 **Acids and caustics** for metal treating and cleaning baths, laboratory and testing work, etc.

TEMPRITE coolers are famous for their high operating efficiency and accurate temperature control. These features result from the basic patented design which permits submerging the cooling coils directly in the liquid refrigerant, together with the use of the Temprite sensitive control valve.

★ ★ ★ ★

Temprite coolers are playing an extremely important part on the Industrial War Front. New applications for improving and increasing production on important war industry operations are being found every day for Temprite coolers.



Model 55-W medium size industrial cooler. Capacity 90 gallons per hour.

Dealers

Temprite liquid coolers are available for dealers and distributors on authorized orders and orders direct from our armed forces. Write our sales department today for complete details.

TEMPRITE PRODUCTS CORP.

Originators of Instantaneous



Liquid Cooling Devices

45 PIQUETTE AVENUE

DETROIT, MICHIGAN

R.S.E.S. Launches Membership Drive

—Fifty Percent Increase Is Goal

TO INCREASE present membership by 50 per cent the Refrigeration Service Engineers Society will launch an International Membership Drive on July 1. The campaign will run until October 31. S. B. Garland, Second Vice-President and Chairman of the Membership Committee, will direct the work of solicitation from his home in North Attleboro, Massachusetts, through the International Office in Chicago.



S. B. GARLAND, Worcester, Mass.
Chairman, Membership Committee

Canada and the United States have been segmented into nine districts, each in charge of a Regional Chairman, who will conduct the campaign in his territory under the direction of Mr. Garland. Prizes have been authorized by President E. A. Plesskott as follows:

\$25 in cash to the chapter making the best showing.

\$15 in cash to the chapter making the second best showing.

\$10 in cash to the chapter making the third best showing.

\$25 war bond to the Regional Chairman who secures the greatest number of new members beyond the quota for his territory.

Each Region has been assigned a quota amounting to 50 per cent of present membership, chapter and at large, within the ter-

ritory. The new members secured in addition to this quota count in the competition for the prizes. In other words securing the quota is a duty in the performance of which it is believed that Regional and Chapter Membership Committee Chairmen will engage with enthusiasm; securing new members in addition to the quota however, is work beyond the call of duty, which should be rewarded with prizes in addition to the applause and admiration of the entire membership.

Herewith are the nine Regions for the International Membership Drive with the names and addresses of the Regional Chairmen:



J. L. DRISKELL, Burley, Idaho
Chairman, Region 9

REGION 1—Dominion of Canada—William Marshall, Regional Chairman, 105 Donegal St., Leaside, Ontario, Canada.

REGION 2—Maine, New Hampshire, Massachusetts, Vermont, Rhode Island, Connecticut, New York and Pennsylvania—John K. Bush, Regional Chairman, 9 Summer St., Lockport, N. Y.

REGION 3—Delaware, Maryland, North Carolina, South Carolina, Virginia, West Virginia, Kentucky and Tennessee—C. A. Brunton, Regional Chairman, 309-32nd St., Huntington, W. Va.

HOW TO EAT without a CAN OPENER

THIS PROBLEM is being solved every day by the American housewife. She is purchasing more and more frozen foods for her family's table because she knows that in most cases, frozen produce costs her less ration points than an equal amount of canned food. And once her family tries these delicious fresh foods her can opener becomes a useless gadget around the house.

This, of course, can mean but 2 things to the refrigeration industry—First, that the American public is rapidly being educated to the superiority of fresh frozen foods over canned goods. Second, that there will be a demand for hundreds of thousands of storage chests and cabinets for commercial and domestic use.

To meet this post-war demand, manufacturers are developing lines that vary from relatively small enclosures within the domestic refrigerators, up to the room size storage for farms, restaurants and large institutions.

Naturally, the capacities of these units will vary according to their requirements, but CHIEFTAIN units are adaptable to all of these applications, and will be available as soon as the urgencies of war permit the cancellation of present limiting orders.

Right now you may require help in designing your frozen food units—may our engineers assist you? Write today for complete information.

★ *When the peace is signed, the leader will still be Chieftain* ★

TECUMSEH PRODUCTS CO. TECUMSEH, MICHIGAN



Chieftain

REGION 4—Indiana, Ohio and Michigan—W. W. Farr, Regional Chairman, 1127 Carnegie Ave., Cleveland, Ohio.

REGION 5—Alabama, Florida, Georgia, Louisiana, Mississippi, Texas, Arkansas and Oklahoma.—E. A. Summer, Regional Chairman, 3867 N. 33rd St., Baton Rouge, La.

REGION 6—Illinois, Iowa, Minnesota, Missouri and Wisconsin.—C. Buschkopf, Regional Chairman, 211 Gould St., Beaver Dam, Wisc.

REGION 7—North Dakota, South Dakota, Nebraska and Kansas—C. J. Doyle, Regional Chairman, 4332 California St., Omaha, Nebraska.

REGION 8—Montana, Colorado, Wyoming and New Mexico—R. C. Kimmel, Regional Chairman 1401 S. Steel St., Denver, Colorado.



CLAUDE BRUNTON, Huntington, W. Va.
Chairman, Region 3

REGION 9 — Idaho, Arizona, Utah, Nevada, California, Oregon and Washington—J. L. Driskell, Regional Chairman, 236 N. Almo Ave., Burley, Ida.

The Secretaries and Membership Committee Chairmen of all chapters of RSES are asked to work hard in the International Membership Drive, not only for the glory of their individual chapters, but for the honor of winning the prizes any of which, added to chapter funds, will be a neat piece of revenue. The Regional Chairman who wins the \$25 war bond—which will be for his own private account by the way—will certainly place the Society in his debt and himself in line for honors from the membership.

Needless to say the International Membership Drive offers opportunities to establish new chapters. These of course will be

welcomed. RSES, on the basis of the total number of refrigeration service engineers in Canada and the United States, has enough opportunity to increase membership not only by 50 per cent as planned, but by at least 100 per cent.



E. A. SUMMER, Baton Rouge, La.
Chairman, Region 5

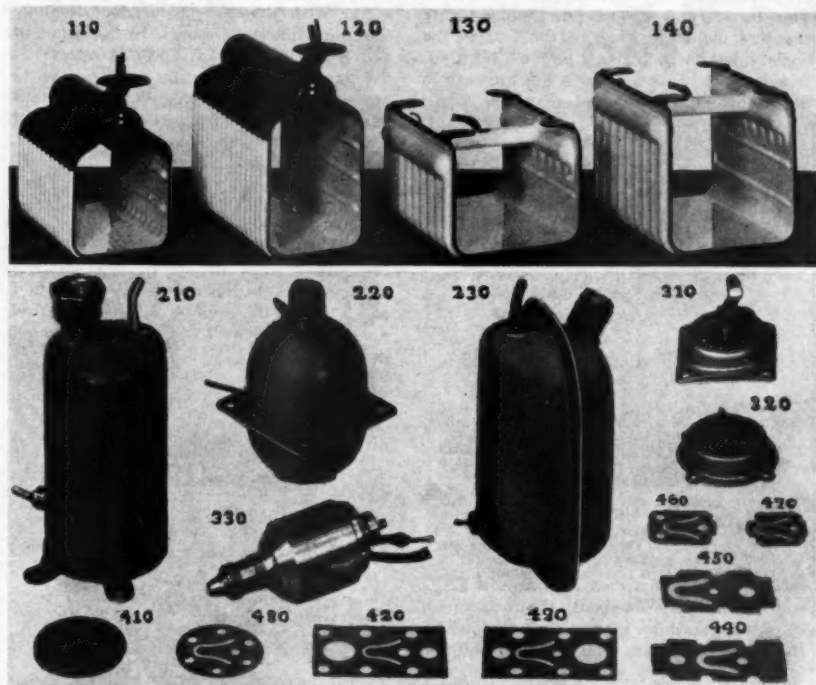
Canada, where the Interprovincial Association has been granted a free hand at organization work, offers a fertile field for the vigorous campaign which the popular "Bill" Marshall, Sergeant-at-Arms of the Interna-



C. BUSCHKOPF, Beaver Dam, Wis.
Chairman, Region 6

tional Society and Chairman of Region 1, will undoubtedly inaugurate. The recent addition of the Nova Scotia and New Brunswick chapters at Halifax and St. John, respectively, will give some notion of the opportunity in the Land of the Maple Leaf.

FOR SALE! —WHILE THEY LAST— Used Evaporators and High Side Floats



EVAPORATORS—FLOODED TYPE—LIKE NEW

110—Two Tray Goose Neck.....	
120—Three Tray Goose Neck.....	
130—8½" w. 7½" h. 11½" d. Mounting holes 6" across front; 8" front to back	\$6 ⁷⁵
140—8½" w. 9½" h. 11½" d.	

HIGH SIDE FLOATS—FIRST CLASS CONDITION

210—Used on Westinghouse Units.....	
220—Ball Type	\$3 ²⁵
230—Can be mounted in back of refrigerators.....	

USED GENUINE WESTINGHOUSE PARTS IN GOOD CONDITION

310—Circuit Breaker	@.75
320—Circuit Breaker	@.75
330—Unloader Valve in Good Condition and Tested.....	\$4.75
410—Discharge Valve Plate.....	\$2.35
420—430—440—450—Valves	@.50
460—470—480—Valves	@.35

Prices F. O. B. Chicago, Ill. Discount 2% on orders under \$250; 5% on orders over \$250.

ACME REFRIGERATION PARTS CO.

5217 W. Madison St.

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Chicago, Ill.

SERVICE ENGINEER

51

June, 1943

"Johnny" Bush, Chairman of Region 2, undertakes his work in the populous New England territory to which are added the great states of New York and Pennsylvania. This territory is already well dotted with chapters including some of the best in the Society, but there is plenty of room for additional chapters as well as a big increase in the membership of present chapters.



C. J. DOYLE, Omaha, Neb.
Chairman, Region 7

Claude Brunton a Past President of RSES will, beyond question boost the membership in pleasing fashion in Region 3 where he is Regional Chairman. He has a group of southeastern states which should have both more chapters and more members in RSES. Claude declares that he will bring them into the fold if it is humanly possible.

Warren Farr is Chairman of Region 4, which includes some wonderful prospects in Ohio, Michigan and Indiana. Warren is an enthusiastic workman at this sort of thing and by the time the campaign ends he is confident that he will have several new chapters and an increase in membership well beyond his quota.

E. A. "Pop" Summer is Chairman of Region 5 which includes much of Dixie. The hustling states of Texas and Oklahoma seem to offer a first rate opportunity for new chapters and new members. Mr. Summer is a veteran organizer, knows about everybody in refrigeration service down south and is very popular, as attested by his recent reelection as President of the Louisiana Chapter for the third consecutive time. He is expected to turn in an expert job for his territory.

By a rare stroke of good fortune Clarence

Buschkopf of Beaver Dam, Wisconsin, who is First Vice-President of RSES, gets the Chairmanship of Region 6, where the prospects for new chapters and members are on a par with those of Eldorado. Region 6 contains Illinois, Missouri, Iowa, Minnesota and Wisconsin, five of the brightest stars in the flag, and refrigeration service is on the same plane. Mr. Buschkopf declares he intends to go through things with a fine-tooth comb.

Out in Omaha on the banks of the Big Muddy stands (C. J.) "Clem" Doyle, Chairman of Region 7. He has only four states—Kansas, Nebraska, North Dakota and South Dakota—but the Treasurer of RSES declares that before the snow flies every single service man within his territory will be asked to join the Society, if he is not already a member. Region 7 will be in the money he declares.

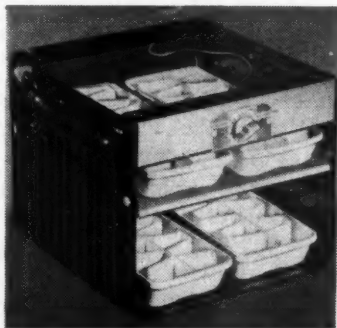


WM. J. MARSHALL, Leaside, Ontario, Canada
Chairman, Region 1

R. C. Kimmel of Denver has made such a good record as Secretary of the Mile High Chapter that he was the natural selection for Chairman of Region 8.

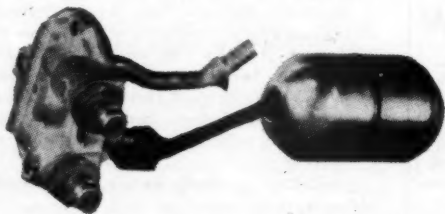
"I intend to show our members down east," writes Mr. Kimmel, "that Colorado, Montana, Wyoming and New Mexico are something besides mountains and desert. We have real refrigeration service engineers out here—not so many perhaps as in other parts but they run high in quality. We are going to have some new chapters too. One is forming right now in Butte, Montana, which will also include members in Helena I understand. Region 8 will make a good showing in this fight. You can bet on that."

ORDER TODAY from G & E and save TIME and MONEY



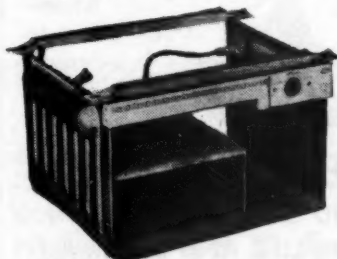
**Porcelain Evaporator
No. 6906**

Dry expansion household evaporator for freon, methyl or sulphur for all domestic refrigerators. Has continuous copper tubing metallically bonded below tray. 11 1/4 in. wide, 11 1/2 in. deep, 9 in. high. 4 tray with front plate. For use with either expansion valve or capillary tubing. **\$9.95**
Evaporator—4 steel baked white enamel trays, Cutler Hammer Cold Control. Complete **\$15.90**



**Low Side Float Assembly for Mullins
Evaporator—No. 6907**

A lucky purchase of the surplus stock of a large manufacturer enables us to pass on this tremendous float value to our customers. A combination lowside float assembly for Mullins evaporators with forged brass header. Complete..... **\$6.75**



**Electro Tinned Evaporator
No. 7908**

This beautiful eight tray fast freezing Steel Electro Tinned, dry expansion household Evaporator for freon, methyl or sulphur, ideal for all makes of refrigerators. Has continuous copper tubing metallically bonded below tray. Inlet tube 3/4 in., outlet 3/4 in., 13 1/4 in. wide, 9 in. high, 11 in. deep, with front plate. For use with either expansion valve or capillary tubing **\$11.50**
Evaporator—1—11 x 8 1/4 in., 6—11 x 3 1/4 in. Steel Trays. Cutler Hammer Cold Control. Complete **\$21.50**



1/4" Bundy Steel Tubing

A soft temper steel tubing made by a copper brazing process from copper coated cold rolled strip steel. The tubing is copper coated inside and outside. This tubing can be used to replace copper tubing for many purposes for refrigeration applications, such as condenser coils, refrigerant lines, or water lines. It may be used with freon or methyl chloride. It is stronger and has a higher resistance to vibration fatigue than copper tubing, but is less ductile. It can be bent, cut, flared, coiled, soldered, brazed and welded. No. 4600—1/4" 30 ft. **\$1.58 ea.** Coll. Lots of 10....

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New York, N. Y.

DEHYDRATORS ALL TYPES REBUILT LIKE NEW



New Felts and New Strainers installed. Refilled with New Davison Silica Gel.

Price: \$1.00 for up to 1 Ton Dehydrator — F.O.B. New York. All fittings must accompany order.

½ H. P. Air Cooled
Condenser 26" long
13" high—26 Tubes

Double row—
Double throw\$6.00

⅓-½ H. P. Frigidaire
Compressor
Bodies\$7.00

EDISON COOLING CORP.

310 E. 149th St.

New York City

J. L. Driskell, Burley, Idaho, who is Chairman of Region 9 has some territory with a thin population, but he points out that the opportunity for new chapters and members on the Pacific Coast, which is also within his territory, is most attractive. He writes: "We have several excellent chapters in Southern California, which proves that north all the way to Puget Sound we can establish additional ones." Mr. Driskell, who is a member of the Board of Directors of RSES, is filled with enthusiasm for the International-Membership Drive, and the chance to turn in a high batting average for Region 9.

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CHARTERS PRESENTED TO NEW CANADIAN CHAPTERS

THE Refrigeration Service Engineers Society presented charters to two new Canadian chapters on May 26 and 27, respectively. The new chapters are the New Brunswick, St. John, N. B., and the Nova Scotia, Halifax, N. S.

Presentation of the charters was made by Charles C. E. Harris, Cambridge, Massachusetts. He went first to St. John where the presentation to the New Brunswick Chapter was made on the evening of May 26th in the Admiral Beatty Hotel. Full details on this meeting will appear in the July issue of *THE REFRIGERATION SERVICE ENGINEER*.

On the following day Mr. Harris went to Halifax, where in the evening he presented its charter to the new Nova Scotia Chapter. Fifteen members were present at the meeting, which was held in the Lord Nelson Hotel. This turn-out, although only about half the membership of the chapter was regarded as satisfactory, because a number were tied up with emergency ship work in the harbor.

The following officers were elected for the ensuing year:

President, W. L. Mullenger.
First Vice-President, C. J. Tredwell.
Second Vice-President, H. E. Kearns.
Secretary-Treasurer, C. J. Tredwell.
Chairman Educational, E. A. Bowes.

These new officers are to be ratified at the next meeting which is scheduled for June 30. Following food and refreshments Mr. Harris went into conference with the members for a discussion of various matters relating to the work of the chapter. Telegrams of congratulation were read from President E. A. Plesskott and the New Brunswick Chapter.

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212 N. Jefferson St.

CHICAGO, ILLINOIS

WARTIME EDUCATIONAL COMMITTEE

COMPLETION of the membership of the Wartime Educational Committee of the Refrigeration Service Engineers Society has been announced by Paul B. Reed, Service Manager, Electric Refrigeration and Air Conditioning Division, Servel, Inc.

In addition to Mr. Reed, who is Chairman, the members of the committee are as follows: M. S. Axelrod, Chicago; D. H. Bodine, Sidney, O.; Edward L. Glaser, Los Angeles, Calif.; M. P. Hanspicker, Malden, Massachusetts; Joseph L. Rosenmiller, York, Pa.; T. W. Savill, Leaside, Ontario, Canada; O. G. Tinkey, St. Louis, Mo., and Harry D. Busby, Chicago.

The first bulletin will go out to members in the very near future.

DEFERMENT OF SERVICE MEN ASKED BY NEW YORK GUILD

THE Refrigeration and Air Conditioning Guild has been organized by refrigeration servicing companies in Greater New York. Chief purpose of the organization is to prevent an impending breakdown of the refrigeration servicing industry by bringing pressure to bear on local draft boards to slow up the heavy drain of men from this field. The Guild has suggested that similar groups be formed throughout the country to impress upon the local draft boards the facts in regard to this situation.

As pointed out in a speech delivered by Paul B. Reed at the Refrigeration Industry Wartime Conference in Chicago and published in the May issue of REFRIGERATION SERVICE ENGINEER, experienced service men are being called into service and are not being given the deferments which are necessary to keep the nation's refrigerators in operating condition.

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Ally yourself with the Industry program of CONSERVATION. SAVE refrigerant and time.

SIMPLIFY leak detection problems.

VISOLEAK shows you those "hard-to-find" leaks, and is successful with all refrigerants. Use four fluid ounces plus one ounce for each 10 lbs. of refrigerant to treat a system.

4 Ounce Size.....	\$ 1.00
8 Ounce Size.....	1.75
1 Pint Size.....	3.00
1 Quart Size.....	5.00
1 Gallon Size.....	16.00

Buy it from your jobber or write direct to

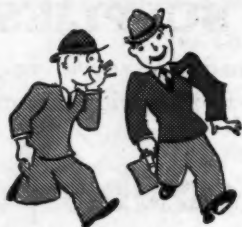
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JUST A WORD, PLEASE!

IN preparing for the tough days of summer, have you done all you can to save yourself gas, rubber, time and worry?

You haven't, unless you have put in a good supply of



THE REPLACEMENT GAS for METER-MISERS

With **HERVEEN** in your truck to service Frigidaire Meter-Misers your recharging problem will be solved.

Practical and satisfactory, **HERVEEN** long ago proved that it is the true friend of service men—a time-saver and a profit-maker—but the present emergency is tailor-made for **HERVEEN**.

Please keep it at your elbow this summer, will you? Order for your requirements now.

Most jobbers stock **HERVEEN**—if yours doesn't write direct to

MODERN GAS CO., Inc.

Manufacturers and Refiners

1084 Bedford Ave., Brooklyn, N.Y.

T. A. Reina, president of the New York Guild, offers his cooperation to any groups making a similar effort. He is located at 4018 Church Ave., Brooklyn, N. Y. He points out that not only are experienced service men being drafted, but no provision is being made for the training of new help since new employees are also being taken into war industries or the armed forces.

R.S.E.S. Chapter Notes

TWIN CITIES CHAPTER

May 4—The meeting was held at the Andrews Hotel, where President Ost presided. Applications for membership from John Weiner and Alex Andrews were read and approved by the membership committee, and the treasury report was given by the treasurer. A discussion on Limitation Order No. L88 was presented by George Klahn, who answered questions to the best of his knowledge. Jack Ehlers brought up the subject of conducting meetings jointly with the ladies auxiliary, and the possible effect it would have on attendance. The result was that a committee consisting of George Lewis, Tru Ingersoll and George Klahn was appointed to investigate and report on the question.

MOUNT ROYAL CHAPTER

May 6—One of the first discussions brought up from the floor was that dealing with the questionnaire sent out by the National Society concerning a possibility of holding an annual meeting this year. The questionnaire is aimed at determining whether or not an annual meeting should be held this year, or whether the majority of members are in favor of keeping the present international officers to serve for the duration. The consensus of opinion of this Chapter was that no meeting be held this year, since the season is so far advanced. However, the members also voted "no" to the question of keeping the present officers for the duration.

Harry Parish, the speaker of the evening, presented a talk on "Refrigeration in War-time." He dealt at some length with the problem of obtaining commercial refrigeration and parts, and the difficulty in obtaining high enough priorities for the installation of this equipment. He spoke at length on the value of commercial refrigeration in

the war effort, and the promotional values of its present uses when applied to post war industry.

April 6—This meeting was well attended, and as usual, was held in the Windsor Hotel. Following the business session, the speaker of the evening, Mr. Dave Greenberg, was introduced by Mr. St. Laurent. Mr. Greenberg spoke at length on the low temperature testing of aircraft instruments, and the application of refrigeration to aircraft construction, preserving of blood plasma, and other uses in the war effort. He also discussed at some length, the tire situation and the routine required in procuring new tires.

Mr. Fabien, the next speaker of the evening, dealt on the subject of the percentage of perishable foods, paying particular attention to cheese and butter. Sergeant Pinke, a former member of the Chapter, and now a member of the R.C.A.F., told of some of his experiences in the armed forces. Corporal Brothers, also a member of the R.C.A.F., added his experiences.

MISSOURI VALLEY CHAPTER

April 1—The meeting was called to order by Vice-President Doyle. Minutes of the previous meeting were read, bills were presented for payment and correspondence received by the Secretary was read. A motion was made and passed that the Chapter hold one meeting a month during the summer season which would be on the third Thursday of each month.

KANSAS CITY CHAPTER

April 13—This meeting was called to order by President R. E. Meeker, at the offices of Temperature Engineering Corporation. Members of the Ladies Auxiliary were present, and Mrs. Herbert V. Jones, Red Cross worker, presented an interesting talk on the American Red Cross Blood Donor Service, urging each one present to make a contribution.

Mr. Visgar read and discussed an article on Pan American Air Lines, and their methods of utilizing refrigeration equipment. He also discussed Silica-Gel and its value as a dehydrant, finally turning to the subject of expansion valves, their adjustments and troubles.

ONTARIO MAPLE LEAF CHAPTER

May 7—This was an executive meeting devoted entirely to business matters. An audit of the Chapter's treasury had been made,




Motor-Starting CAPACITORS

- Makes no difference whether that capacitor-type motor calls for an electrolytic or an oil-filled capacitor. Aerovox makes both kinds.

And to make certain that you'll get the correct type, Aerovox issues an up-to-the-minute catalog listing ALL standard motors and their replacement capacitor needs. Meanwhile, live-wire refrigerator-parts jobbers stock these Aerovox replacement capacitors.

● Ask Your Jobber...

He'll gladly supply your motor-starting capacitor needs if he handles the Aerovox line. Ask for latest copy of Aerovox listings.



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and a report was given at this time by G. A. Burns. In discussing the questionnaire sent out by the International Society regarding an annual meeting this year, the Chapter voted "no" to the question of whether or not a meeting should be held, and voted "yes" to the question of whether the present international officers should serve for the coming year. In discussing summer activities, the Chapter decided to suspend the annual picnic for this year, but voted in favor of holding a Stag Night at the King Edward Hotel as the opening meeting of the fall session.

MILE HIGH CHAPTER

May 10—In discussing future activities of the Chapter, it was decided to hold a picnic at Elitch's Gardens during the summer months. Ernie Martin, Sam Werb and Bill Hemphill were appointed on the committee to make arrangements. Priorities and the latest limit orders were discussed at some length.

On the educational program, the membership was divided into two teams, and each side in turn was required to present a question pertaining to refrigeration. If a question was missed, the person was disqualified,

and thus, the question period continued until Ernie Martin, the last man down, won the prize of \$5.00.

ST. LOUIS CHAPTER

April 27—This was an open meeting held for all refrigeration service men at the Kings-Way Hotel. The meeting was called to order by the President of the Chapter, Mr. E. C. Fix. Eighty-seven service men were present.

The purpose of this meeting was to convey to the men the necessity of having the proper authorization, from the War Production Board, to carry on in the service business. Those present were enlightened on the various Priorities that govern the refrigeration business by Mr. A. W. Kirby of the WPB, Priorities Field Service; Mr. Herman Spoehrer of the Spoehrer-Lange Valve Company; Mr. Dick Dawson of the Alco Valve Co.; Mr. Otto Friemel of the Brass and Copper Sales Co.; Mr. S. Nil Mohler of the R. E. Thompson Co. Jack Searls of White Rodgers Electric Co., had to leave the city, but sent his regrets that he could not attend.

Mr. Mohler, Educational Chairman of the





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Chapter, was chairman of the meeting. Mr. Kirby read the Priorities P-126 and L-38, and as he read, explained very clearly just what each paragraph meant, so that there would be no doubt in the minds of those present. After the reading of these Priorities, Mr. Mohler stated that each and every service organization in the refrigeration business should have a certificate number so as to operate with the P-126.

Cards were passed to the men and they were told to state on them whether or not they had applied for the certificate number. The returns showed that about half of those had applied and the other half had not, but intended to do so immediately. It was also stated by the chairman that records of the service organizations should be kept for two years.

Mr. Dawson gave some of the high lights of the War Industry meeting that took place at the Palmer Hotel in Chicago and what you cannot do on the P-126 priority. Mr. Friemel reminded us that there is not any provision of priorities for household or domestic refrigerators at the present time, but parts for domestic refrigerators could be obtained if the jobber had them in stock.

The floor was opened for questions and the men leading the discussions did a very good job. Some of the queries were, "What do you need, to have parts repaired by the manufacturer?"—"On what order do you apply for refrigerants?"—"In making inventory, how are the refrigerants that have been lost through leaks in the cylinder valve accounted for?" These and many other questions made this a very interesting meeting and those who attended found that it was indeed worth their while.

The International President gave a talk on the purpose of the Refrigeration Service Engineers Society and how it is helping each and every service man in the country by helping the War Production Board. The RSES has been instrumental in doing many important things that have not as yet been brought to light, he said, so that we may all know.

Mr. Plesskott spoke of the Canadian Chapters and what fine work they are doing in the organization. Applications were given to those who asked for them and the secretary was busy signing up the new members. This being our Educational Chairman's first meeting in that capacity, it was indeed a successful one. Meeting adjourned at 11:00 P.M.

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WORCESTER CHAPTER

The newly elected officers of the Worcester Chapter for the coming year are as follows: *President*, John A. Osper; *First Vice-President*, Albert Moors; *Second Vice-President*, Wilrose J. Hanson; *Secretary-Treasurer*, John J. Brosnan; *Sergeant-at-Arms*, Alvar E. Manninen; *Educational Chairman*, Harry E. Manchester; *Board of Directors*, Lester F. Atchue, Robert N. Davis and Stanley T. White.

LOS ANGELES CHAPTER

April 28—The first part of the evening was devoted to business problems of the Chapter, and particularly to the efforts of the Chapter in obtaining correct addresses and 'phone numbers for all members. Two new applications for membership were received, but voting on their acceptance was postponed to a later date.

The speakers of the evening, Messrs. R. F. Wood, consultant of the G. R. Goodrich Rubber Co., and Mr. Ruch, manager of the Pasadena store, presented an interesting lecture and demonstration on synthetic rubber. This talk was illustrated with a movie short showing methods of manufacture. Mr. P. H. Askew described his recent trip to Chicago and some things he had learned about the procedure in obtaining parts.

The drawing for the defense stamps resulted in Pete Askew and L. P. Roth each winning a \$5.00 book. John Lewis, now a member of the armed forces, was also a winner, and the stamps are to be sent to his wife.

Ladies Auxiliary

KANSAS CITY AUXILIARY

April 13—The meeting was held in the offices of Temperature Engineering and was called to order by Mrs. C. R. Visger. Three new applications for membership were received, letters of thanks for gifts from the Auxiliary were read, birthday cards signed by those present were sent to C. B. Lambert and E. L. Smith, various bills were presented and approved for payment, and various other business matters taken care of.

A suggestion was made that a scratch book showing a record of all Auxiliary activities be kept. No action, however, was taken. Mrs. T. L. Anderson resigned her post as Treasurer and Mrs. C. B. Lambert was elected in her place.

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NIAGARA FRONTIER AUXILIARY

April 9—The meeting was held at the home of Mrs. A. H. Keirn. Minutes of the previous meeting were read, but due to the small attendance, no further business was conducted. The balance of the evening was devoted to playing games, and the prizes went to Mrs. Goeckel and Mrs. Muller. Refreshments were served by the hostess.

Congratulations were sent to Mr. and Mrs. Martin Bernstone on the birth, April 27, of a daughter, Marilyn Gloria. Mr. Bernstone is Sergeant-at-Arms of the Niagara Frontier Chapter and Mrs. Bernstone was the former Secretary-Treasurer of the Ladies Auxiliary.

May 14—This meeting was held in the home of Mrs. John Muller and was presided over by President Mrs. Keirn. A card of thanks was received from the Bernstone's. Mrs. Keirn and Mrs. Goeckel were winners of the games, and refreshments were served following the meeting.

TWIN CITIES AUXILIARY

May 4—Mrs. Chermak, President, presided over the meeting. The minutes of the previous meeting were read, and the problem of locating a meeting room for each future meeting was allocated to the Secretary. Committees appointed during the meeting were Mesdames Ehlers and Harris on the entertainment committee, and Ost, Palen, Hoppenrath and Swanson on the refreshments committee. Games were played following the business session, and refreshments served at the close of the meeting.

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NEW CATALOGS AND BULLETINS

A BULLETIN on new Victory 43 water coolers has been issued by the Day & Night Manufacturing Co., Cooler Division, Monrovia, Calif. The new V-43 series, all of which are illustrated, with specifications, cover all drinking water and process coolers the company will produce under existing War Production Board limitation orders. Drinking water coolers are available for Army, Navy, Maritime Commission and Lend-Lease. Process coolers are available for industries and governmental agencies.

TWO new specifications sheets describing Carrier unit heaters have been published by Carrier Corporation, Syracuse, New York. The 2-page circulars relate to Carrier's Five-Way Vertical Discharge Unit Heater, and to the company's horizontal discharge unit heater. Each of these models utilizes about one-fifteenth the basic materials used in direct radiation for the equivalent amount of heating. The Five-Way unit is available with two, three or four warm air discharge outlets.

THE diversified products of The Weatherhead Company, Cleveland, are shown together in one publication for the first time in the new Weatherhead Catalogs Supplement, which is now available for distribution. This supplement is published for the convenience of engineering, production, designing and purchasing departments. The supplement, eight pages in all, is a cross section of five lines of products. Each division is represented by a condensation of the regular catalog. The Aviation Division has a showing of aviation tube, pipe, universal and hose fittings. Sixty-nine representative automotive and industrial tube and pipe fittings and other products are illustrated in the section devoted to them. The valves, fittings, and accessories manufactured for the refrigeration industry are described in the refrigeration section. A page is devoted to Weatherhead's exclusive Ermeto fittings, and ample space is given to Marine products. On the last page the four Weatherhead plants are pictured, along with the regular catalogs which are available on request.

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Rate: Two Dollars for fifty words or less.
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